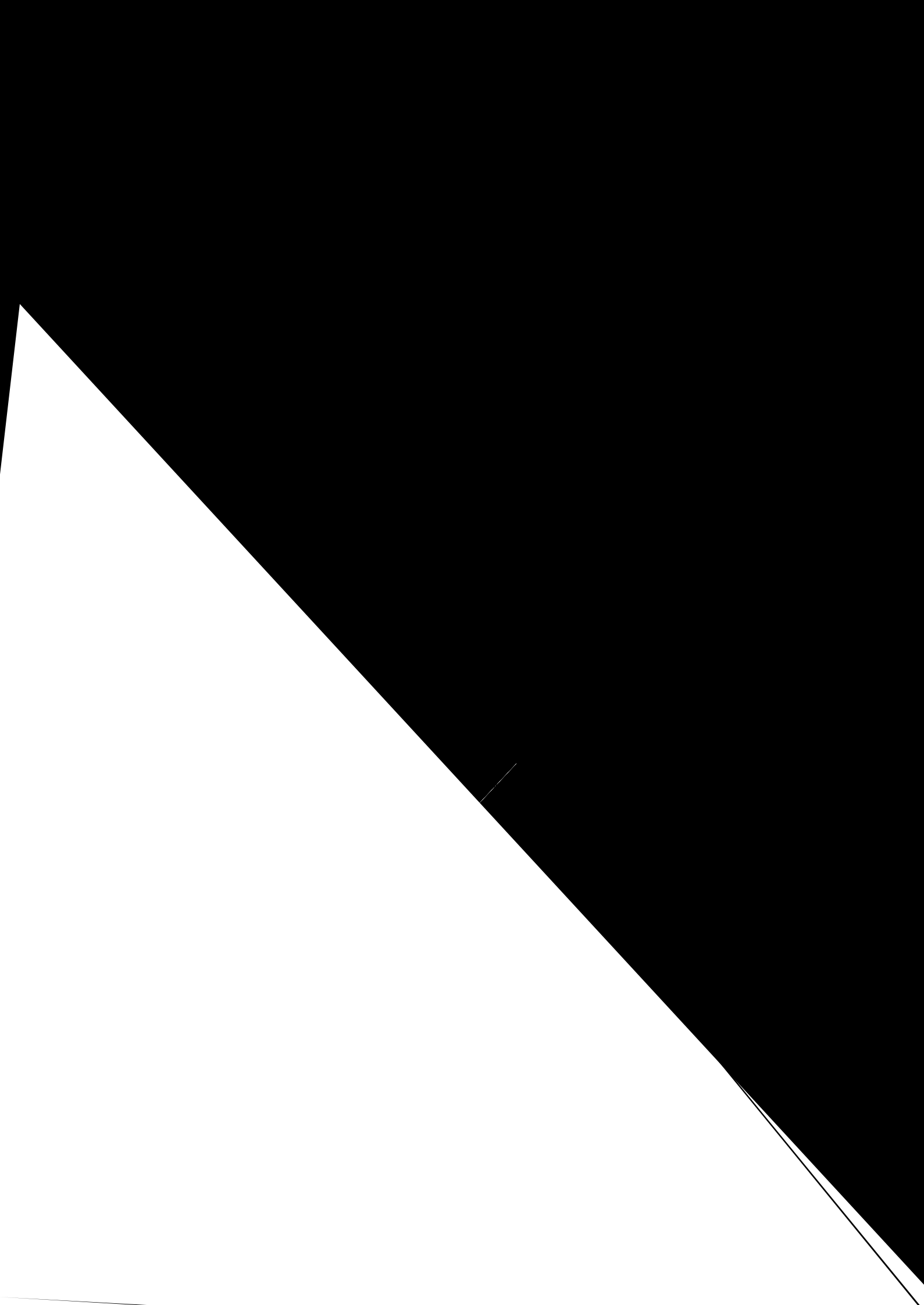

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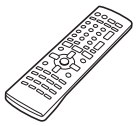
INTRO

Accessories

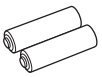
Please check and identify the supplied accessories. Use numbers indicated in parentheses when asking for replacement parts.

(Only for U.S.A.)
To order accessories, refer to "Accessory Purchases" on page 54.
(Only for Canada)
To order accessories, call the dealer from whom you have made your purchase.

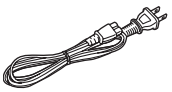
- ☐ 1 **Remote control** (EUR7722X20)



- ☐ 2 **Batteries** for remote control



- ☐ 2 **AC power supply cord** (K2CB2CB00006)

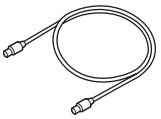


- ☐ 1 **AM loop antenna** (N1DAAAA00002)

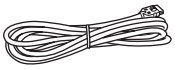
- ☐ 1 **FM indoor antenna** (RSA0007-L)

- ☐ 1 **Video cable** (RJL1P016B15A)

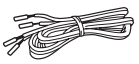
- ☐ 1 **75 Ω coaxial cable** (VJA1125)



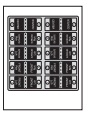
- ☐ 1 **System cable** (K1HA25HA0001)



- ☐ 5 **Speaker cables**
  3×4-m (13-foot) cables (REE1203A-J)
  2×10-m (33-foot) cables (REE1203C-J)



- ☐ 1 **Sheet of speaker-cable stickers**

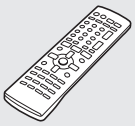


- ☐ 1 **Antenna plug** (K2RC021B0001)

Note
The included AC power supply cord is for use with this unit only. Do not use it with other equipment.

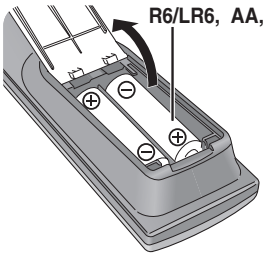
The remote control

Remote control



Batteries

■ Batteries



- Insert so the poles (+ and −) match those in the remote control.
- Do not use rechargeable type batteries.

Do not:
- mix old and new batteries.
- use different types at the same time.
- heat or expose to flame.
- take apart or short circuit.
- attempt to recharge alkaline or manganese batteries.
- use batteries if the covering has been peeled off.

Mishandling of batteries can cause electrolyte leakage which can damage items the fluid contacts and may cause a fire.

Remove if the remote control is not going to be used for a long period of time. Store in a cool, dark place.

■ Use

Aim at the sensor (➜ page 9), avoiding obstacles, at a maximum range of 7 m (23 feet) directly in front of the unit.

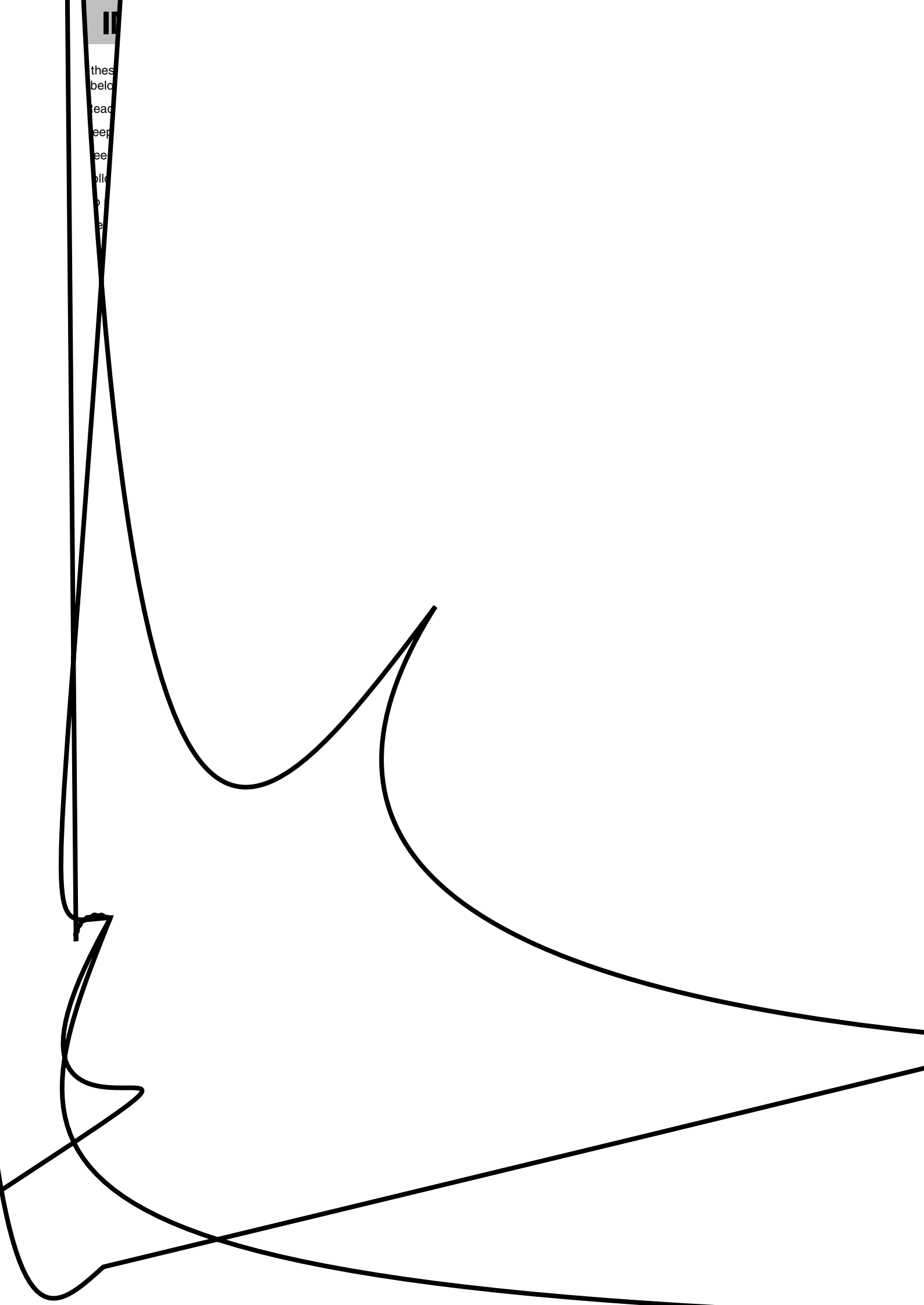
User memo:

DATE OF PURCHASE _____
DEALER NAME _____
DEALER ADDRESS _____
_____
TELEPHONE NUMBER _____

The model number and serial number of this product can be found on either the back or the bottom of the unit.
Please note them in the space provided below and keep for future reference.

MODEL NUMBER SC-HT820V

SERIAL NUMBER _____



Discs that can be played

Disc	Logo	Indication in these operating instructions	Remarks	
DVD-RAM		RAM	Recorded using Version 1.1 of the Video Recording Format (a unified video recording standard).	●Recorded with DVD video recorders, DVD video cameras, personal computers, etc. ●Remove discs from their cartridges before use.
		JPEG	Recorded using the DCF (Design rule for Camera File system) standard.	●Recorded with Panasonic DVD-Video recorders ●To play JPEG files, select “Play as Data Disc” in Other Menu (➜ page 27)
DVD-Audio		DVD-A	—	
		DVD-V	Some DVD-Audio discs contain DVD-Video content. To play DVD-Video content, select “Play as DVD-Video” in Other Menu (➜ page 27)	
DVD-Video		DVD-V	—	
DVD-R			Panasonic DVD-R recorded and finalized※ on a Panasonic DVD-Video recorders or DVD-Video cameras are played as DVD-Video on this unit.	
Video CD		VCD	—	
SVCD			Conforming to IEC62107	
CD		CD	This unit is compatible with HDCD. HDCD-encoded CDs sound better because they are encoded with 20 bits, as compared with 16 bits for all other CDs. ●During HDCD play, “HDCD” lights on the unit’s display.	
CD-R CD-RW	—	WMA MP3 JPEG CD VCD	●This unit can play CD-R/RW (audio recording disc) recorded with the formats on the left. Close the sessions or finalize※ the disc after recording. ●**HighMAT discs** WMA, MP3 or JPEG files only. To play without using the HighMAT function, select “Play as HighMAT” in Other Menu (➜ page 27).	

※A process that allows play on compatible equipment.

●It may not be possible to play the above discs in all cases due to the type of disc or condition of the recording.

■ Discs that cannot be played

PAL discs (except DVD-Audio), DVD-ROM, CD-ROM, CDV, CD-G, DVD+R, +RW, DVD-RW, SACD, Divx Video Discs and Photo CD, DVD-RAM that cannot be removed from their cartridge, 2.6-GB and 5.2-GB DVD-RAM, and “Chaoji VCD” available on the market including CVD, DVCD and SVCD that do not conform to IEC62107.

■ Audio format of DVDs

This unit automatically recognizes and decodes with these symbols.

■ To prevent damage

Do not;

●load more than one disc per tray.

●close the drawer by hand.

■ To clean discs

DVD-A DVD-V VCD CD

Wipe with a damp cloth and then wipe dry.

RAM DVD-R

●Clean with an optional DVD-RAM/PD disc cleaner (LF-K200DCA1, where available).

●Never use cloths or cleaners for CDs etc.

■ Handling precautions

●Do not attach labels or stickers to discs (This may cause disc warping, rendering it unusable).

●Do not write on the label side with a ball-point pen or other writing instrument.

●Do not use record cleaning sprays, benzine, thinner, static electricity prevention liquids or any other solvent.

●Do not use scratch-proof protectors or covers.

●Do not use the following discs:

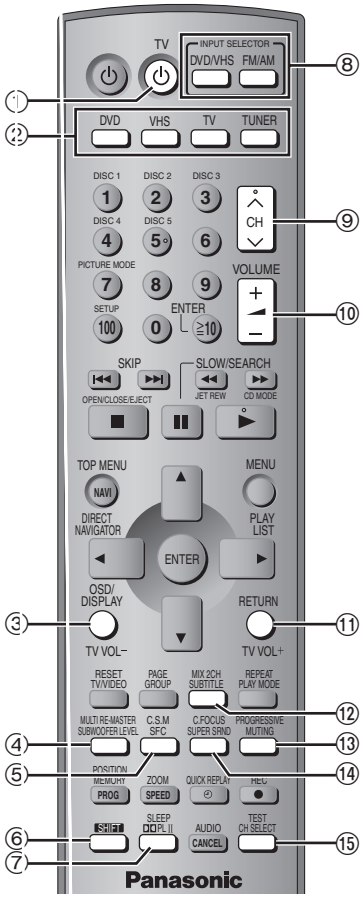
–Discs with exposed adhesive from removed stickers or labels (rented discs etc).

–Discs that are badly warped or cracked.

–Irregularly shaped discs, such as heart shapes.

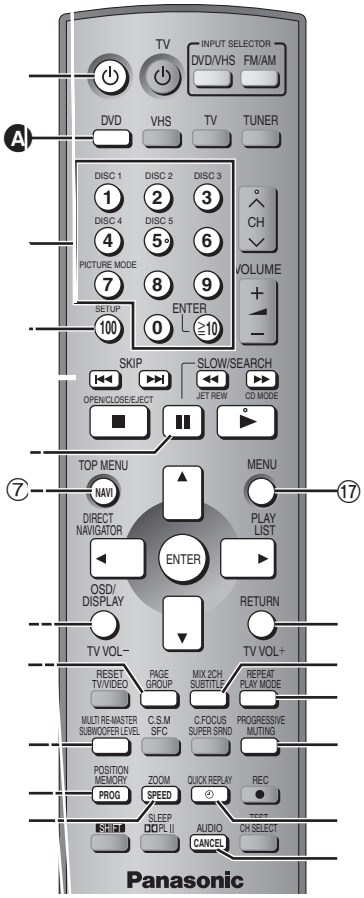
● If SHIFT appears after the button name the function will not work unless you use with [SHIFT] button. Make sure to press [SHIFT] and the button.

Remote control—common buttons



① **TV Power button [⏻TV]** 16
② **Remote control mode selector button**
[DVD] [VHS] [TV] [TUNER]
Changes the remote control mode. The button lights once pressed.
The selected mode is held in memory until you press another mode selector button.
The mode selector button lights each time you press an operational control button showing which mode is in use.
③ **TV volume down button [TV VOL−]** 16
④ **Bass adjust button [SUBWOOFER LEVEL]** 45
⑤ **Sound field control button [SFC]** 44
Custom sound memory button [C.S.M] SHIFT 45
⑥ **Shift button [SHIFT]**
To use the functions labeled in orange, press the button while pressing [SHIFT].
⑦ **Dolby Pro Logic II/Dolby Pro Logic button [PLII]** 44
Sleep timer button [SLEEP] SHIFT 46
⑧ **Main unit selector button**
DVD/VHS source button [DVD/VHS]
Switch the source on the main unit between DVD and VHS.
Tuner/band button [FM/AM]
Switch the source on the main unit to tuner and change the band.
⑨ **TV channel buttons [∧ ∨ CH]** 16
⑩ **Volume buttons [+ − VOLUME]** 18
Volume may be lower when playing DVD-Video than when playing other discs or during television broadcasts. Reduce the volume before playing other sources or returning to the television so volume doesn't increase suddenly.
⑪ **TV volume up button [TV VOL+]** 16
⑫ **Down-mix button [MIX 2CH]** SHIFT 45
⑬ **Muting button [MUTING]** 46
⑭ **Super surround button [SUPER SRND]** 44
Center focus button [C.FOCUS] SHIFT 44
Speaker channel button [CH SELECT] 45
Test signal button [TEST] SHIFT 45

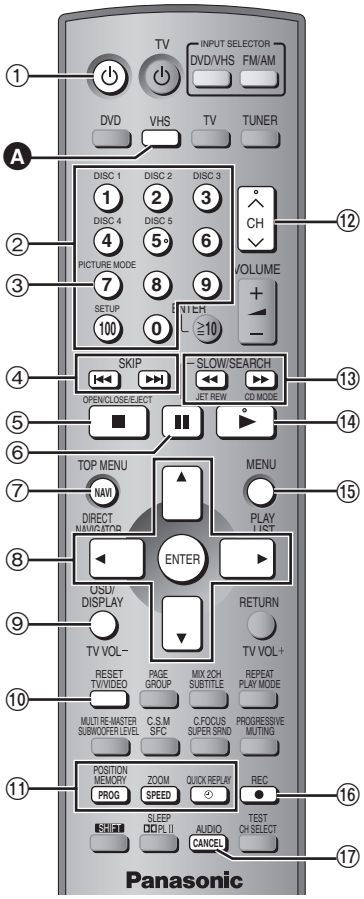
Remote control—DVD operation



Ⓐ **DVD remote control mode button [DVD]** 17
Switch the remote control mode to DVD. Make sure you press before doing DVD operations. When in DVD mode, the [DVD] button lights each time you press one of the DVD operation buttons indicated below.
① **Power button [⏻]** 17
Press to switch the unit from on to standby mode or vice versa. In standby mode, the unit is still consuming a small amount of power.
② **Numbered buttons [1–9, 0, ≧10/ENTER]** 18
③ **DVD SETUP menu button [SETUP]** SHIFT 17, 28
④ **Skip buttons [|◀◀, ▶▶| SKIP]** 18
⑤ **Stop button [■]** 18
Open/close button [OPEN/CLOSE/EJECT] SHIFT 18
⑥ **Pause button [❚❚]** 18
⑦ **Top menu button [TOP MENU]** 25
Direct navigator button [DIRECT NAVIGATOR] 26
⑧ **Cursor buttons [▲ ▼ ◀ ▶]/Enter button [ENTER]** 17
⑨ **On-screen menu button [OSD/DISPLAY]** 26
⑩ **Group button [GROUP]** 19
Still picture select button [PAGE] SHIFT 21
⑪ **Multi re-master button [MULTI RE-MASTER]** SHIFT 21
⑫ **Position memory button [POSITION MEMORY]** 20
⑬ **Zoom button [ZOOM]** 20
⑭ **Disc buttons [DISC1]–[DISC5]** SHIFT 19
Slow/search buttons [◀◀ ▶▶ SLOW/SEARCH] 18
CD mode button [▶▶ CD MODE] SHIFT 21
⑮ **Play button [▶]** 18
⑰ **Menu button [MENU]** 24
Play list button [PLAY LIST] 25
Return button [RETURN] 19
Subtitle button [SUBTITLE] 20
Play mode button [PLAY MODE] 22
Repeat mode button [REPEAT] SHIFT 23
Progressive output button [PROGRESSIVE] SHIFT 18
Quick replay button [QUICK REPLAY] 21
Cancel button [CANCEL] 22
Soundtrack button [AUDIO] SHIFT 20

● If SHIFT appears after the button name the function will not work unless you use with [SHIFT] button. Make sure to press [SHIFT] and the button.

Remote control—VHS operation



Ⓐ VHS remote control mode button [VHS] 30
Switch the remote control mode to VHS. Make sure you press before doing VHS operations. When in VHS mode, the [VHS] button lights each time you press one of the VHS operation buttons indicated below.

① **Power button [⏻] 15**
Press to switch the unit from on to standby mode or vice versa. In standby mode, the unit is still consuming a small amount of power.

② **Numbered buttons [1–9, 100, 0] 32**

③ **Picture mode button [PICTURE MODE] SHIFT 31**

④ **Index search button [I◀◀ ▶▶I SKIP] 37**

⑤ **Stop button [■] 30**
Tape eject button [OPEN/CLOSE/EJECT] SHIFT 30

⑥ **Pause button [❚❚] 30**

⑦ **Jet navigator button [NAVI] 36**

⑧ **Cursor buttons [▲ ▼ ◀ ▶]/Enter button [ENTER] 34**

⑨ **On-screen display button [OSD/DISPLAY] 41**

⑩ **TV/Video button [TV/VIDEO] 16**
Tape counter reset button [RESET] SHIFT 41

⑪ **Timer recording buttons 34**
Timer programming button [PROG]
Tape speed button [SPEED]
Timer program standby button [🕘]

⑫ **Channel, tracking, and vertical hold buttons [∧ ∨ CH] . .31, 32**

⑬ **Fast-forward/rewind button [◀◀ ▶▶ SLOW/SEARCH] 30**
Jet rewind button [◀◀ JET REW] SHIFT 30

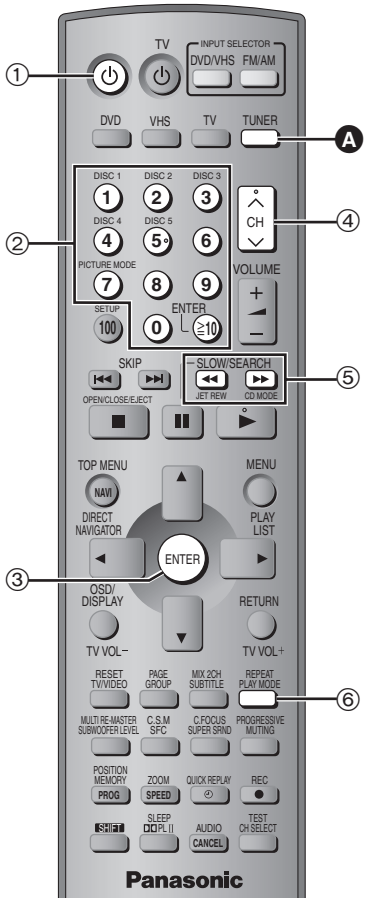
⑭ **Play button [▶] 30**
Press and hold for five seconds to start repeat play 31

⑮ **Menu button [MENU] 38**

⑯ **Recording button [● REC] SHIFT 32**

⑰ **Cancel button [CANCEL] 35**
Audio button [AUDIO] SHIFT 41

Remote control—TUNER operation



Ⓐ TUNER remote control mode button [TUNER] 42
Switch the remote control mode to TUNER. Make sure you press before doing TUNER operations. When in TUNER mode, the [TUNER] button lights each time you press one of the TUNER operation buttons indicated below.

① **Power button [⏻] 42**
Press to switch the unit from on to standby mode or vice versa. In standby mode, the unit is still consuming a small amount of power.

② **Numbered buttons [1–9, 0, ≧10/ENTER] 42**

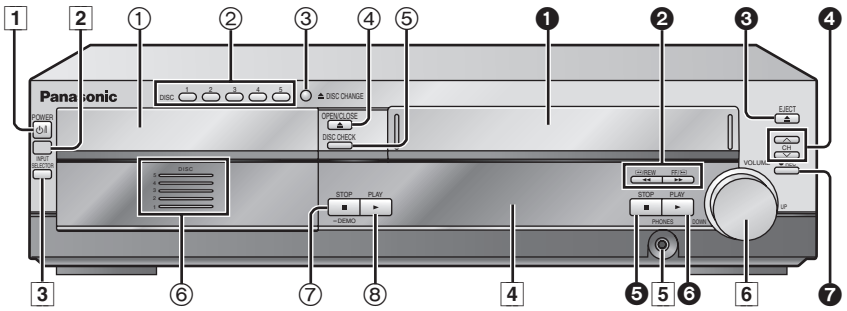
③ **Enter button [ENTER] 42**

④ **Channel buttons [∧ ∨ CH] 42**

⑤ **Tuning buttons [◀◀ ▶▶] 42**

⑥ **FM mode button [PLAY MODE] 42**

Main unit and subwoofer



■ Common buttons

1 Power button [⏻/I POWER] 15
Press to switch the unit from on to standby mode or vice versa. In standby mode, the unit is still consuming a small amount of power.

2 Remote control signal sensor

3 Source selector button [INPUT SELECTOR]
VHS→DVD/CD→FM→AM

4 Display

5 Headphone terminal [PHONES] 46

6 Volume dial [VOLUME DOWN, UP] 18

■ DVD section

① **Drawer** 18

② **Disc buttons [DISC1–5]** 18

③ **Disc change button [▲ DISC CHANGE]** 19

④ **Drawer open/close button [▲ OPEN/CLOSE]** 18

⑤ **Disc check button [DISC CHECK]** 19

⑥ **Disc indicators** 18

⑦ **Stop button [■ STOP]** 18
Demo button [–DEMO] 14

⑧ **Play button [► PLAY]** 18

■ VHS section

❶ **Tape slot** 30

❷ **Fast-forward and rewind buttons [◄◄ (◄◄)/REW] [►► FF/(►►)]** 30

❸ **Tape eject button [▲ EJECT]** 30

❹ **Channel buttons [∧ CH] [∨ CH]** 32

❺ **Stop button [■ STOP]** 30

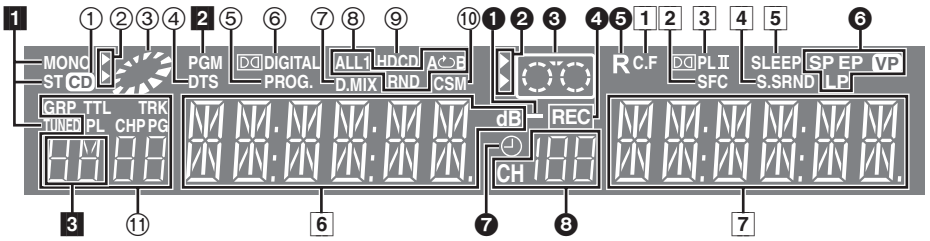
❻ **Play button [► PLAY]** 30

❼ **Recording button [● REC]** 32

■ Subwoofer

1 AC supply indicator [AC IN]
This indicator lights when the subwoofer is connected to a household AC outlet.

Main unit display



■ Common display

1 Center Focus indicator 44

2 Sound Field Control indicator 44

3 Dolby Pro Logic II/Dolby Pro Logic indicator 44

4 Super Surround indicator 44

5 SLEEP timer indicator 46

6 Main display (Orange)
Disc play elapsed time, program recording end time, volume, TUNER frequency/channel display, various messages, etc.

7 Main display (Green)
Time display, video play/record elapsed time, program recording start time, various messages, etc.

■ DVD operation

① **CD mode indicator** 21
Lights when CD mode is on.

② **DVD selector indicator**
Lights when DVD is selected.

③ **Operation status of DVD section**
- Lights when a disc is inserted.
- Displays play status graphically.
  Rotating: playing
  Stopped: paused

④ **DTS indicator**

⑤ **Progressive video indicator** 18

⑥ **Dolby Digital indicator**

⑦ **Down mix indicator** 45

⑧ **Play sequence indicator**
ALL: During all group or all disc random play 22
RND: During random play 23
1 RND: During one disc random play 23
(↻): During repeat 23
A (↻) B: During A-B repeat 27

⑨ **HDCD indicator** 6

⑩ **Custom Sound Memory indicator** 45

⑪ **Group/Play list/Track/Title/Chapter/Program number display**

■ VHS operation

❶ **VHS playback indicator**
Lights when a video cassette is playing.

❷ **VHS selector indicator**
Lights when the selector is in VHS mode.

❸ **Operation status of VHS section**
- Lights when a video cassette is inserted.
- Flashes when recording or timer recording is attempted with no video cassette inserted.
- Displays play status graphically.
  Rotating: playing
  Stopped: paused

❹ **Recording indicator** 32

❺ **Repeat playback indicator** 31

❻ **Tape speed indicator** 32

❼ **Timer program recording indicator** 34

❽ **Channel display**

■ Tuner operation

1 Radio broadcast display 42
MONO: Forced monaural
ST: Stereo
TUNED: Receiving radio signal

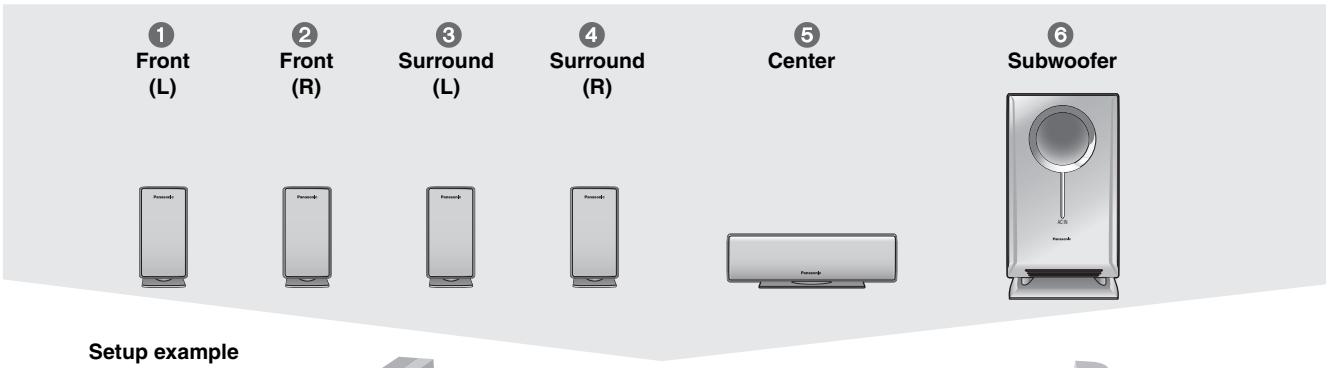
2 Preset indicator 42

3 Band display

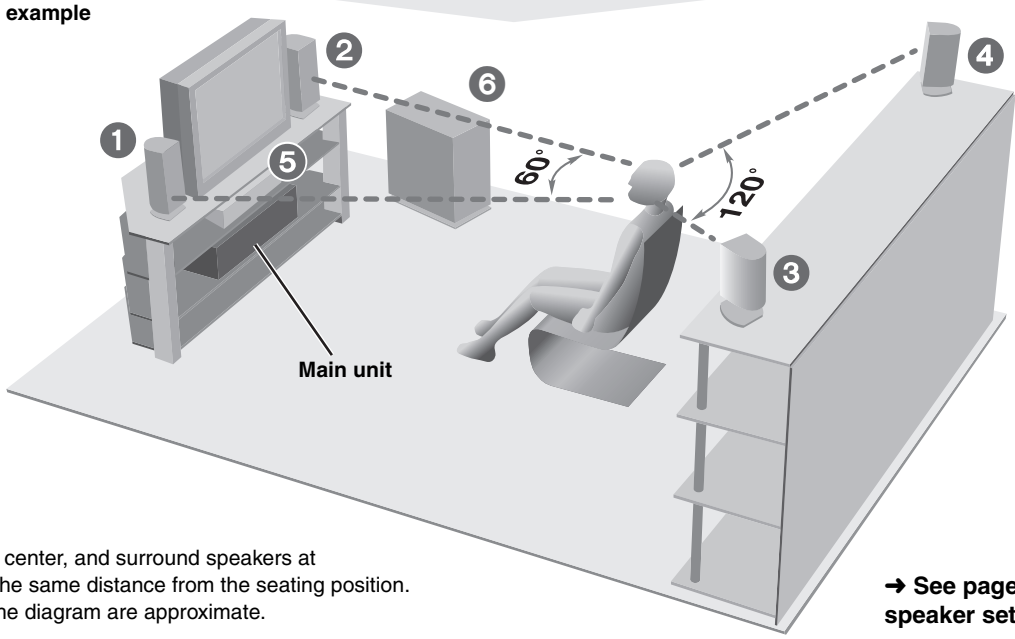
Simple setup

STEP 1 Locating

How you set up your speakers can affect the bass and the sound field. Note the following points.
- Place speakers on flat secure bases.
- Placing speakers too close to floors, walls, and corners can result in excessive bass. Cover walls and windows with thick curtains.
- The front left, right and surround speakers are all the same.



Setup example



Place the front, center, and surround speakers at approximately the same distance from the seating position.
The angles in the diagram are approximate.

➜ See page 47 for other speaker setup options.

●Use only supplied speakers

Using other speakers can damage the unit and sound quality will be negatively affected.
- Set the speakers up on an even surface to prevent them from falling. Take proper precautions to prevent the speakers from falling if you cannot set them up on an even surface.

Main unit

Note

Keep your speakers at least 10 mm ($^{13}/_{32}$″) away from the system for proper ventilation.

Center speaker

- Vibration caused by the center speaker can disrupt the picture if it is placed directly on the television. Put the center speaker on a rack or shelf.
- To prevent the speakers from falling do not place the speakers directly on top of the television.

Subwoofer

Place to the right of the television, on the floor or a sturdy shelf so that it won't cause vibration.
Leave 10 cm (4″) at the rear for ventilation.

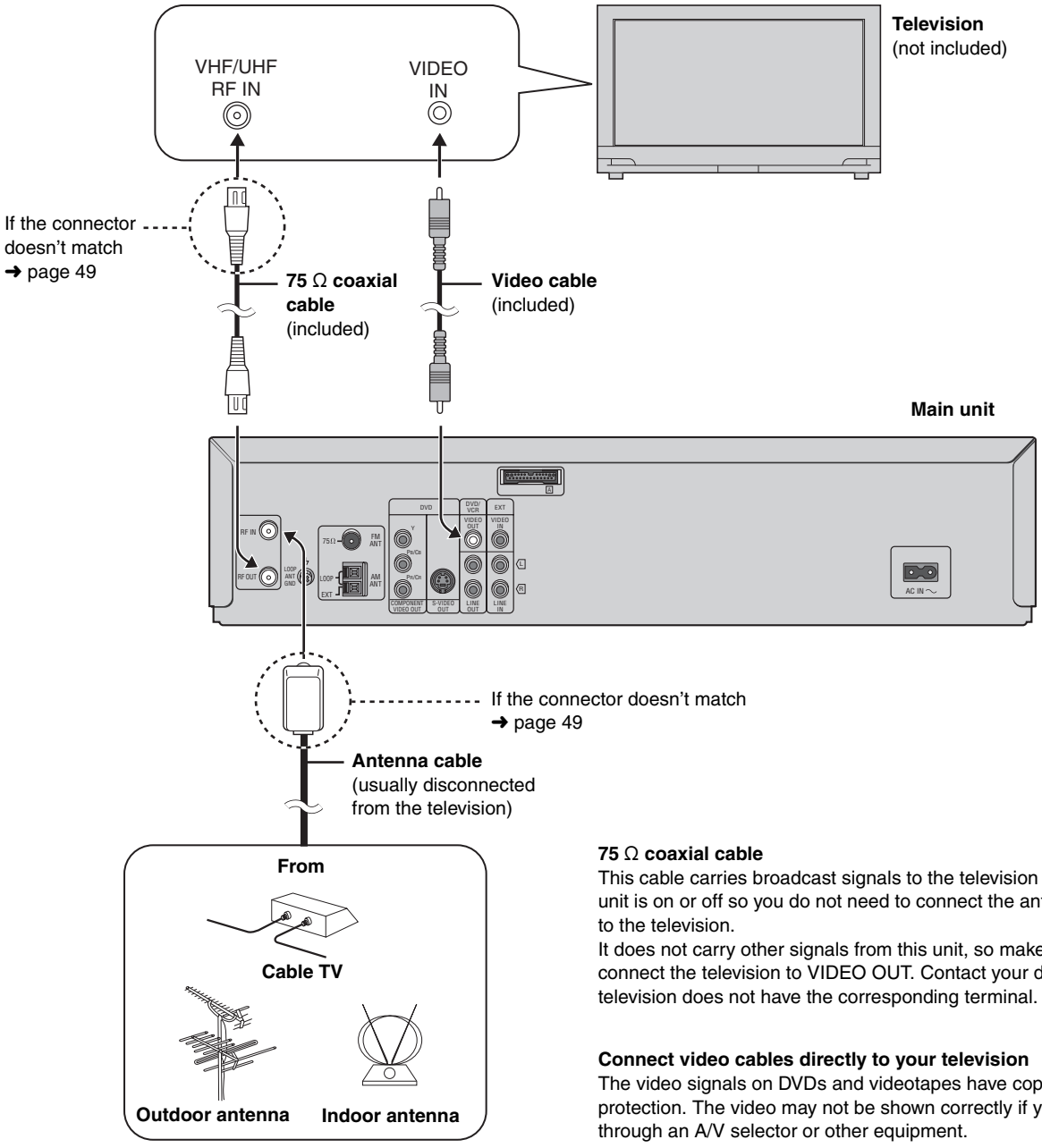
Notes on speaker use

- You can damage your speakers and shorten their useful life if you play sound at high levels over extended periods.
- Reduce the volume in the following cases to avoid damage.
  - –When playing distorted sound.
  - –When the speakers are receiving howling from a record player, noise from FM broadcasts, or continuous signals from an oscillator, test disc, or electronic instrument.
  - –When adjusting the sound quality.
  - –When turning the unit on or off.

Caution
- **The main unit and supplied speakers are only to be used as indicated in this setup. Failure to do so may lead to damage to the amplifier and/or the speakers, and may result in the risk of fire. Consult a qualified service person if damage has occurred or if you experience a sudden change in performance.**
- **Do not attempt to attach these speakers to walls using methods other than those described in this manual.**

STEP 3 Television

Basic connection



75 Ω coaxial cable
This cable carries broadcast signals to the television whether the unit is on or off so you do not need to connect the antenna directly to the television.
It does not carry other signals from this unit, so make sure you connect the television to VIDEO OUT. Contact your dealer if your television does not have the corresponding terminal.

Connect video cables directly to your television
The video signals on DVDs and videotapes have copyright protection. The video may not be shown correctly if you connect through an A/V selector or other equipment.

To enjoy cable and satellite television
Connection ➜ page 48
Subscribe to a cable or satellite company.

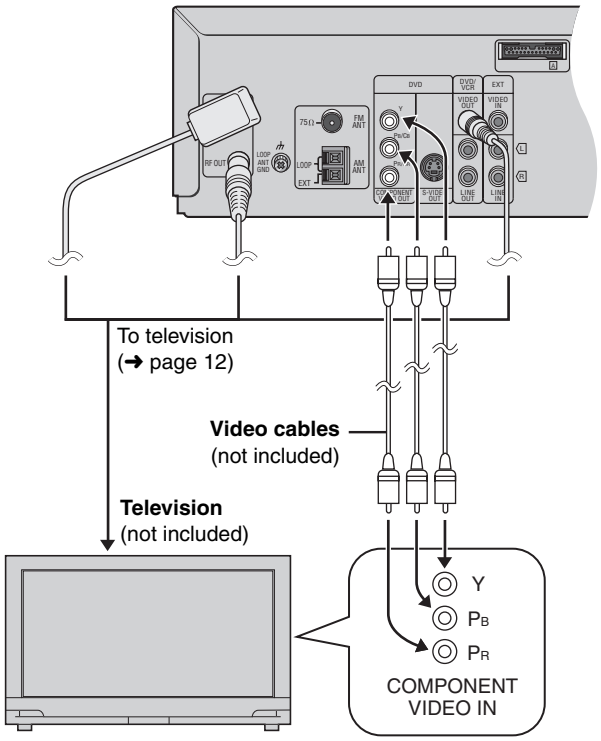
If irregular coloring occurs on your television

The supplied speakers are designed to be used close to a television, but the picture may be affected with some televisions and setup combinations.
If this occurs, turn the television off for about 30 minutes.
The television's demagnetizing function should correct the problem. If it persists, move the speakers further away from the television.

For better video from DVD

The following connections are for video from the DVD section only. Make sure you have connected the VIDEO OUT terminal with the television to view video from the VHS section (➜ page 12).
You may need to change the video-input mode on the television to view video from the VHS and DVD sections. Read your television's operating instructions for details.

■ Connecting a television with COMPONENT VIDEO terminals



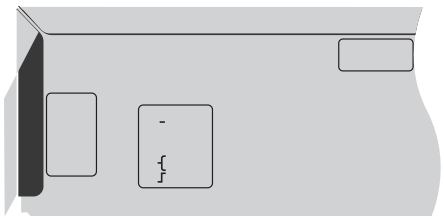
COMPONENT VIDEO OUT terminal
These terminals can be used for either interlace or progressive output and provide a purer picture than the S-VIDEO OUT terminal. Connection using these terminals outputs the color difference signals (P_B/P_R) and luminance signal (Y) separately in order to achieve high fidelity in reproducing colors.

- The description of the component video input terminals depends on the television or monitor (e.g. $Y/P_B/P_R$, Y/B-Y/R-Y, $Y/C_B/C_R$). Connect to terminals of the same color.
- After making this connection, change the black level for a better picture (➜ page 28, Video—Black Level Control).

To enjoy progressive video

- Connect to the component video input terminals on a 480P compatible television. (Video will not be displayed correctly if connected to an incompatible television.)
- All televisions manufactured by Panasonic and that have 480P input connectors are compatible. Consult the manufacturer if you have another brand of television.

■ Connecting a television with an S-VIDEO IN terminal



S-VIDEO OUT terminal
The S-video terminal achieves a more vivid picture than the VIDEO OUT terminal by separating the chrominance (C) and luminance (Y) signals. (Actual results depend on the television.)

Note
Connect to a different terminal group than that you used for the video cable (e.g., "VIDEO 2").
Picture from this unit's VHS will not appear when you use the same group input terminal connections because the S-video terminal input takes precedence.

SETUP

SETUP

STEP 6 Operating the television

■ TV maker setting

You can control the television by entering the remote control code.

1 Refer the chart below for the code for your television.

2 Aiming the remote control at the television

While pressing and holding [TV] (TV), press the numbered buttons to enter the code number.

- Example: To select 01, press [0] ➜ [1].
- The remote control outputs the on/off signal. If the code is correct, the equipment turns on or off. If it doesn't, try entering another code.

Note

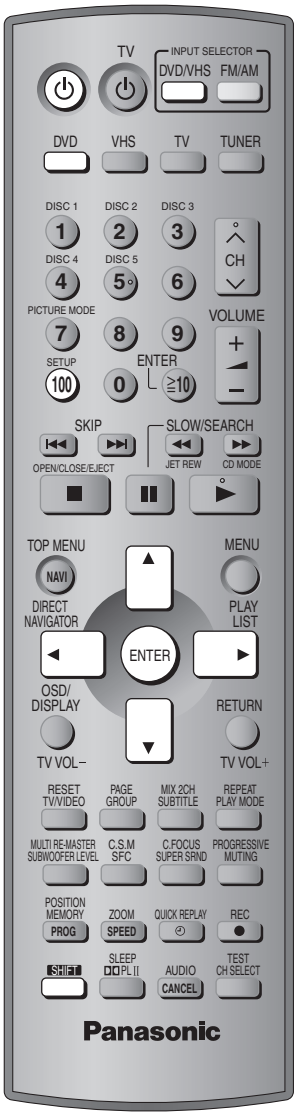
- If your television brand is not listed or if the code listed for your television does not allow control of your television, this remote control is not compatible with your television.
- Reenter the codes after you change the batteries.

■ TV operation

Operation	Buttons
Power on/ standby	[⏻TV]
Remote control TV mode	[TV] ● Switch the remote control mode to TV. Press before doing TV operations. When in TV mode, the [TV] button lights each time you press an operation button.
TV/Video switch	[TV/VIDEO]
Selecting channels	[∧ CH], [∨ CH] or numbered buttons [1–9, 100, 0, ≧10/ENTER]. ● [≧10/ENTER] is used to confirm channel selection on some televisions manufactured by other companies.
Adjusting volume	[TV VOL−] [TV VOL+]

Manufacturer	Code No.	Manufacturer	Code No.
Panasonic	01, 02	PHILIPS	06
FISHER	14	PIONEER	02, 10, 19
G.E.	02, 03, 07, 09	QUASAR	02
GOLD STAR	07, 15	RCA	03, 07, 09, 13, 23, 24, 25
HITACHI	05, 07	SANYO	14
JVC	12	SHARP	08, 21
LXI	03, 06, 07, 10, 14, 15	SONY	04
MAGNAVOX	06, 07, 11, 15, 22	SYLVANIA	06, 07, 15
MITSUBISHI	07, 15, 16, 21	SYMPHONIC	17
NEC	07, 15	TOSHIBA	10, 21
PHILCO	06, 07	ZENITH	18, 20

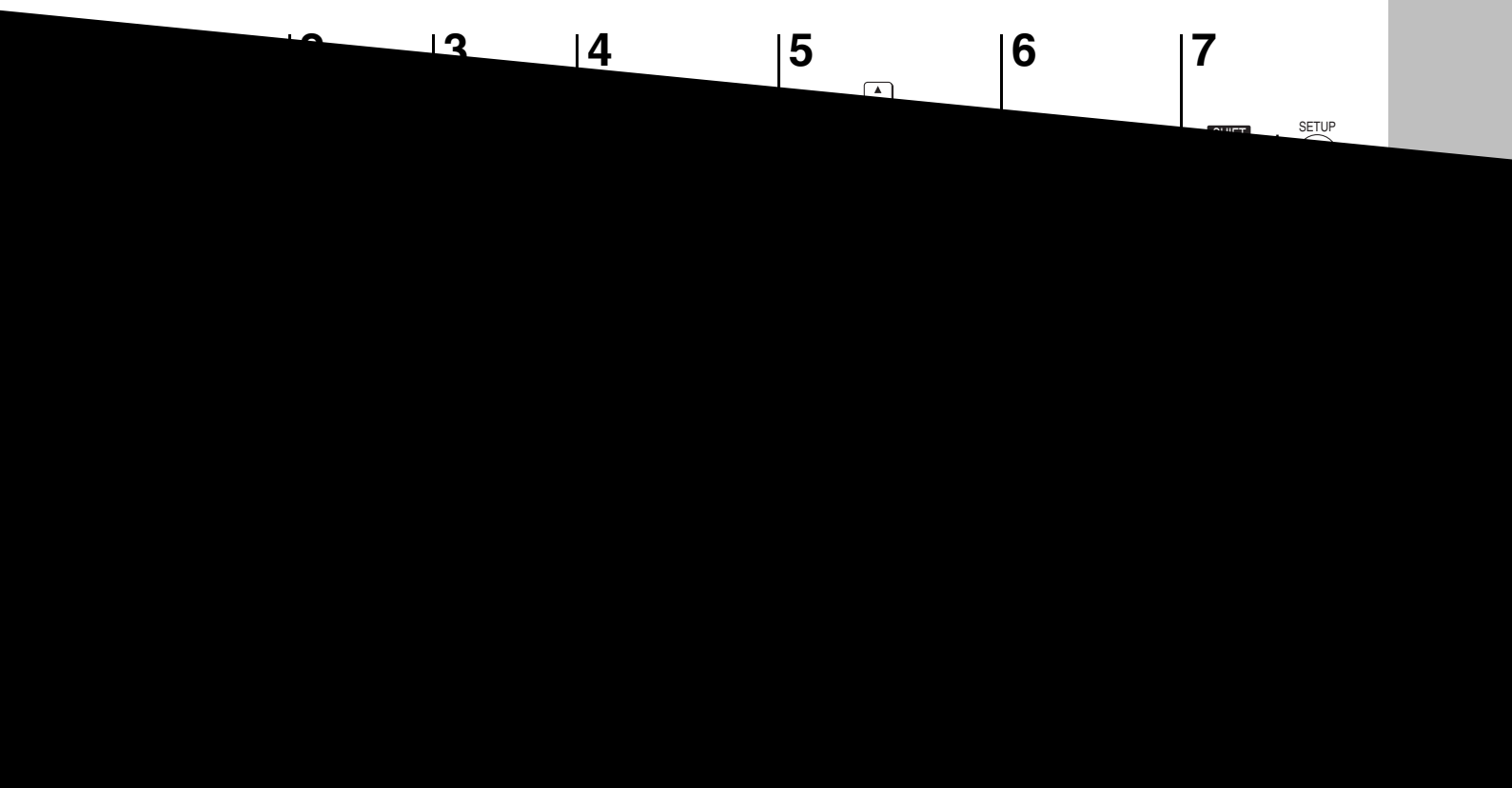
STEP 7 DVD QUICK SETUP



Turn on the television and select the video input for the DVD.

The QUICK SETUP screen assists you to make necessary settings such as:

- **Menu Language (➜ page 29)**
- **TV Type (➜ page 28)**
- **TV Aspect (➜ page 28)**



DVD Basic play

Turn on the television and select the appropriate video input for the DVD.

❶ Put the remote control in DVD mode.

DVD

❷ Turn on the unit.

POWER

❸ Select "DVD/CD".

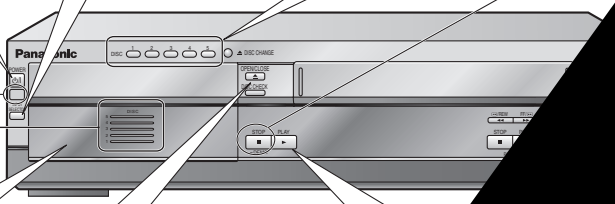
INPUT SELECTOR

❹ Select the disc tray.

DISC 1 2 3 4 5

Stop

STOP



❺ Open the disc tray and load the disc.

- Load double-sided discs so the label for the side you want to play is facing up.

OPEN/CLOSE

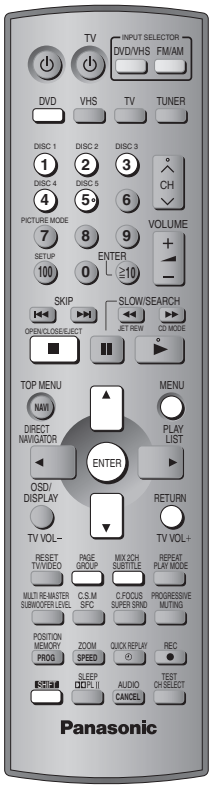
❻ Close the disc tray.

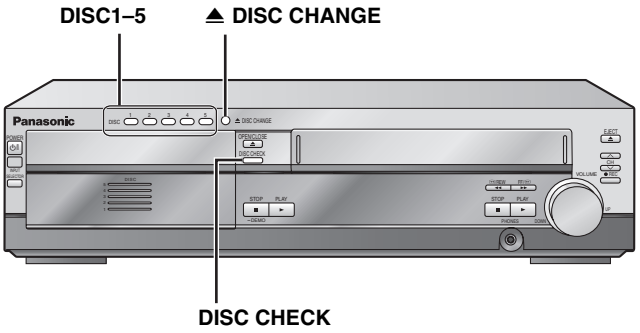
- A disc indicator lights green to show the tray is in the play position.
- To load discs on the other trays, repeat steps 4 and 6.

❼ Start pla

DVD

Progressive video	SHIFT + PROGRESSIVE MUTING	PROG.
Stop	OPEN/CLOSE/EJECT ■	The position is me… when " " flas… display. ● Press [▶] (… **DVD-V** T… **previo…** (➜ p… m… ● P…
Pause	❚❚	
Skip		





Disc menu

TOP MENU (NAVI)

DVD-A **DVD-V**
Shows a disc top menu

MENU

DVD-V
Shows a disc menu

RETURN

VCD
Shows a disc menu

Return to previous screen

RETURN

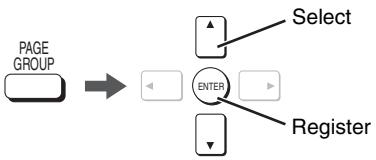
Information screen

MIX 2CH SUBTITLE

WMA **MP3** **JPEG**
Turns the information screen on/off

Starting play from a selected group

DVD-A **WMA** **MP3** **JPEG**
A folder on WMA/MP3 and JPEG discs is treated as a "Group".



Selecting the disc directly

SHIFT + DISC 1 DISC 2 DISC 3 DISC 4 DISC 5

- You can select the disc with [DISC1–5] on the main unit.

Checking the disc trays

(Main unit)
DISC CHECK

All discs except the disc in play open without interrupting play. While stopped, all trays will open.
- Press [DISC CHECK] again to close the trays.
- Do not pull out the trays, remove, or insert discs during the disc check.

Changing the discs during play

(Main unit)
▲ DISC CHANGE
DISC 1 2 3 4 5

You can change the other discs without interrputing play.
- After selecting the disc tray, press [▲ DISC CHANGE] to close the tray.

Note
Discs continue to rotate while menus are displayed. Press [■] when you finish to preserve the unit's motor and your television screen.

If you are experiencing problems, refer to troubleshooting (➜ pages 50–52).

See below for details.

DVD

(Only when the elapsed play time can be displayed
JPEG: Works with all JPEG content)
This position is memorized even after turning off the unit, changing the source or moving the disc out of the play position.

Press [POSITION MEMORY].

- Up to 5 discs.
- When the sixth disc is memorized, the earliest position is replaced.
- You cannot recall the position in CD Mode (➜ page 21).

When the unit is turned on, “DVD/CD” is reselected or the disc comes to the play position,

Press [►] (PLAY) to start play from that position.8

SHIFT + MULTI RE-MASTER SUBWOOFER LEVEL

Multi Re-master

Enjoys more natural sound.

SHIFT + PAGE GROUP

Page skip

Selects still pictures.

SHIFT + CD MODE

Sequential play (CD Mode)

Plays discs in succession.

QUICK REPLAY

Quick replay

Replays a scene.

See below for details.

Multi Re-master

RAM DVD-V (Discs recorded with 48 kHz only)
DVD-A (Discs recorded with 44.1 kHz and 48 kHz only)
VCD CD

- During 2ch output of these discs, this feature gives you a more natural sound by adding the higher frequency signals not recorded on the disc.
- During multi-channel output of these discs, this feature reproduces the frequencies lost during recording to give you a sound closer to the original.

WMA MP3 (Disc recording is other than 8 kHz, 16 kHz, 32 kHz)
This feature reproduces the higher frequencies lost during recording to give you a sound closer to the original.

Press [SHIFT]+[MULTI RE-MASTER] to select "1" "2" or "3".

Setting	DVD-A DVD-V CD (LPCM/PPCM) Type of music	Other discs Effect level
1	High tempo (e.g., pops and rock)	Light
2	Various tempos (e.g., jazz)	Medium
3	Low tempo (e.g., classical)	Strong
Off	Off	Off

Page skip

DVD-A

During play or while paused

Press [SHIFT]+[PAGE].

The page changes each time you do this.

Sequential play (CD Mode)

VCD CD WMA MP3

While stopped

Press [SHIFT]+[CD MODE] to play all loaded discs (except for DVDs and JPEG files).

- HighMAT menus and Video CD playback control are disabled.
- You cannot change the mode during program or random play (➜ page 22).
- CD Mode turns off when you switch the unit to standby.

Quick replay

Except JPEG
(Only when the elapsed play time can be displayed)

Press [QUICK REPLAY] to skip back a few seconds.

REPEAT PLAY MODE

All group or program play

See below for details.

DVD

All group/Program/Random play

While stopped, press [PLAY MODE].

Each time you press the button:

DVD-A DVD-V WMA MP3

All group (DVD-A)→Program→ Random→off (Normal play)

VCD CD (There is no on-screen display.)

(PGM)→1-DISC (1 RND)→ A-DISC (ALL RND)

↑——— off (Normal play) ———┘

To exit

Press [PLAY MODE] several times while stopped.

- Disable HighMAT disc play to use random and program play. Select "Play as Data Disc" in Other Menu (➜ page 27).

All group play

DVD-A

Press [►] (PLAY).

Program play (up to 24 items)

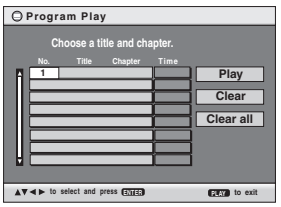
VCD CD

You can program all the items on discs.

DVD-A DVD-V WMA MP3

You can program all the items on a disc in the play position.

e.g. DVD-V



1 VCD CD

Press [SHIFT]+([DISC1]–[DISC5]).

2 Press the numbered buttons to select the items (WMA MP3 then press [ENTER]).

e.g. CD

Disc No. Track No. Program No.

- **To select a 2-digit number**
  e.g. 23: [≧10] ➜ [2] ➜ [3]
  WMA MP3 [2] ➜ [3] ➜ [ENTER]
- Repeat this step to program other items.
- VCD CD
  Step 1 is unnecessary when programming tracks on the same disc.
- DVD-A DVD-V WMA MP3
  To select an item using the cursor buttons
  Press [ENTER] and [▲ ▼] to select an item, then press [ENTER] again to register.
  All the items in the selected disc, title or group are selected when you select "ALL".

3 Press [►] (PLAY).

To add or change the program

VCD CD (Add only)

Repeat steps 1 and 2.

DVD-A DVD-V WMA MP3

Press [▲ ▼] to select an item, then repeat step 2.

To clear an item

VCD CD

Press [CANCEL].

DVD-A DVD-V WMA MP3

1 Press [▲ ▼] to select an item.
2 Press [CANCEL] (or press [▲ ▼ ◄ ►] to select "Clear" and press [ENTER]).

To clear the whole program

VCD CD

Press [■] so "CLEAR" is displayed.

DVD-A DVD-V WMA MP3

Press [▲ ▼ ◄ ►] to select "Clear all" and press [ENTER].

Note

- DVD-V WMA MP3
  Times are not displayed while programming.
- VCD CD
  Items the unit cannot find can be programmed but are canceled during play. This is also the case if you program DVD-RAM, DVD-Audio, DVD-Video, WMA, MP3 and JPEG.
- The program is cleared when you switch the unit to standby, select another source, exit the program mode by pressing [PLAY MODE] or move the disc out of the play position.
  VCD CD The program is retained in memory.

REPEAT PLAY MODE — Random play

SHIFT + REPEAT PLAY MODE — Repeat play

See below for details.

Random play

VCD CD

1-DISC (1 RND): You can play all the items on a disc in the play position in random order.

A-DISC (ALL RND): You can play all the items on all the discs in random order.

DVD-A DVD-V WMA MP3

You can play selected item(s) on a disc in the play position in random order.

1 DVD-A DVD-V

Press the numbered buttons to select a title or a group.

e.g. DVD-V

DVD-A

- To enter all groups, press [◄ ►] to select “All” and press [ENTER].
- To deselect a group, press the numbered buttons corresponding to the group you want to clear.

2 **Press [►] (PLAY).**

Repeat play

(Only when the elapsed play time can be displayed
JPEG: Works with all JPEG content.)

During play

Press [SHIFT]+[REPEAT] several times to select an item to be repeated.

RAM

PG REPEAT→ALL REPEAT (Entire disc)→REPEAT OFF

- During play list play
  SCENE REPEAT→PL REPEAT→REPEAT OFF

DVD-A

TRACK REPEAT→GROUP REPEAT※→REPEAT OFF

DVD-V

CHAPTER REPEAT→TITLE REPEAT※→REPEAT OFF

VCD CD (There is no on-screen display.)

TRACK REPEAT→ALL REPEAT (Entire disc)→REPEAT OFF

WMA MP3 (There is no on-screen display.)

CONTENT REPEAT→GROUP REPEAT※→REPEAT OFF

JPEG

GROUP REPEAT→REPEAT OFF

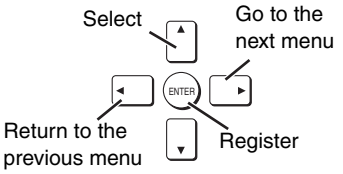
※ During all group (DVD-A), program and random play “ALL REPEAT” is displayed.

DVD

1

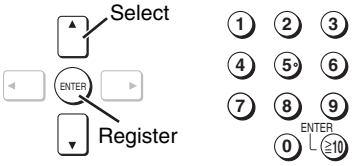
Press once.
(When pressed twice, the elapsed play time indicator appears. ➜ below)

2



Select the menu.

3



Make the settings.

4

Press to exit.

Items shown differ depending on the type of software.

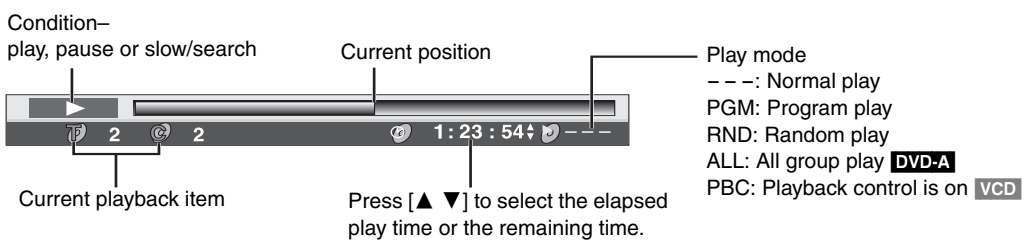
Main menus

Program **Group** **Title** **Chapter** **Track** **Playlist** **Content**	**To start from a specific item**
Time	**To skip incrementally or decrementally (Time Slip)** 1 Press [ENTER] twice to show Time Slip indicator. 2 Press [▲ ▼] to enter the time and press [ENTER]. ●Press and hold [▲ ▼] to alter faster. **To start from a specific time (Time Search)** **To change remaining/elapsed time display**
Audio	(➜ page 20) **To displays the current bitrate or sampling frequency**

Still Picture	**To switch still picture**
Thumbnail	**To show thumbnail images**
Subtitle	(➜ page 20)
Marker(VR)	**To recall a marker recorded on DVD-Video recorders**
Angle	(with multiple angles) **To select the angle**
Rotate Picture	**To advance pictures** **To rotate pictures**
Slideshow	**To turn on/off slideshow** **To change the slideshow timing (0–30 sec)**

■ Elapsed play time indicator

(except JPEG)


Condition–
play, pause or slow/search
Current position
Play mode
– – –: Normal play
PGM: Program play
RND: Random play
ALL: All group play DVD-A
PBC: Playback control is on VCD
T 2 C 2
1:23:54 – – –
Current playback item
Press [▲ ▼] to select the elapsed play time or the remaining time.

DVD

Other settings

Play Speed	RAM DVD-V **To change play speed** –from ×0.6 to ×1.4 (in 0.1 units) ●After you change the speed –Sampling frequency of 96 kHz is converted to 48 kHz.

■ Play Menu

(Only when the elapsed play time can be displayed
JPEG: Works with all JPEG content.)

Repeat	(➜ page 21)
A-B Repeat	Except JPEG RAM (still picture part) **To repeat a specified section** Press [ENTER] at the starting and ending points. Press [ENTER] again to cancel.
Marker	**To mark up to 5 positions to play again** Press [ENTER] (The unit is now ready to accept markers.) To mark a position: [ENTER] (at the desired point) To mark another position: [◄ ►] ➜ [ENTER] To recall a marker: [◄ ►] ➜ [ENTER] To erase a marker: [◄ ►] ➜ [CANCEL] ●This feature doesn't work during program and random play.

■ Picture Menu

Picture Mode	**Normal** **Cinema1:** Mellows images and enhances detail in dark scenes. **Cinema2:** Sharpens images and enhances detail in dark scenes. **Animation** **Dynamic** **User** (Press [ENTER] to select "**Picture Adjustment**") (➜ below)
	Picture Adjustment **Contrast Brightness Sharpness Color Gamma** (Adjusts the brightness of dark parts.) **Depth Enhancer** Reduce the rough noise in the background to give a greater feeling of depth. ●This does not work while using Cinema 1 or 2 (➜ above). **Block NR** Smoothes block noise. **Mosquito NR** Reduces the smudging that appears around contrasting sections of the picture. **3D-NR/Dot NR** Reduces overall noise/Reduces the dot noise that occurs at the borders between colors.
Video Output Mode	**480I** (Interlace) ⟷ **480P** (Progressive)
Transfer Mode	If you have chosen "480P" (➜ above), select the method of conversion for progressive output to suit the type of material. **Auto1** (normal): For viewing film material **Auto2:** For viewing film material (the same as Auto 1, but able to convert 30-frame-per-second progressive video) **Video:** For video material

■ Audio Menu

Dolby Pro Logic II	(➜ page 44)
Dialogue Enhancer	**To make the dialogue in movies easier to hear** DVD-V (Dolby Digital, DTS, MPEG, 3-channel or over, with the dialogue recorded in the center channel) **On ⟷ Off**
Multi Re-master	(➜ page 21)

■ Display Menu

Information	**On ⟷ Off** **(JPEG: Off, Date, Details)**
Subtitle Position	**0 to −60 (in 2 units)**
Subtitle Brightness	**Auto, 0 to −7**
4:3 Aspect	**To select how to show images made for 4:3 aspect screens on a 16:9 aspect television** **Normal:** Laterally stretches images. **Auto:** Expands 4:3 letterbox images to fill more of the screen. Other images appear in full in the center of the screen. **Shrink:** Images appear in the center of the screen. **Zoom:** Expands all images fill the screen. If your television has a similar feature, use it instead for a better effect.
Just Fit Zoom	(➜ page 20)
Manual Zoom	(➜ page 20)
Bitrate Display	RAM DVD-V VCD **On ⟷ Off**
GUI See-through	**On ⟷ Off**
GUI Brightness	**−3 to +3**

■ Other Menu

Play as DVD-Video or **Play as DVD-Audio**	While stopped ●Select "Play as DVD-Video" to play DVD-Video contents on DVD-Audio.
Play as DVD-VR **Play as HighMAT** or **Play as Data Disc**	While stopped ●Select "Play as Data Disc" to play JPEG files on DVD-RAM or to play HighMAT disc without using the HighMAT function.

DVD

■ "Display" tab

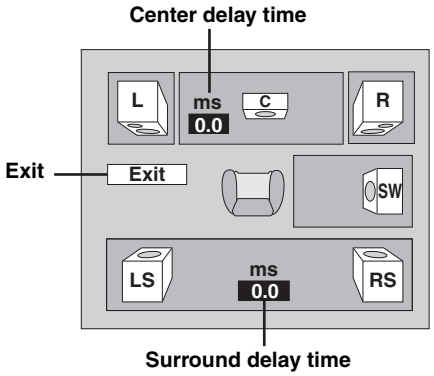
Menu Language	● English ● Français ● Español
On-Screen Messages	● On ● Off

■ "Others" tab

HighMAT	● Enable ● Disable (Unable to use the HighMAT function.)
QUICK SETUP	● Yes ● No
Re-initialize Setting This returns all values in the Setup menus to the default settings.	● Yes: The password screen is shown if "Ratings" (➜ page 28) are set. Please enter the same password. After "INIT" on the display disappears, turn the unit off and on again. ● No

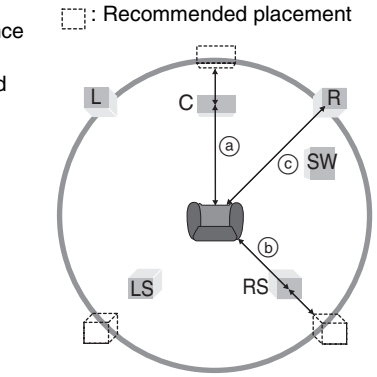
Changing the delay time (Speaker Setting)

(Effective when playing multi-channel audio)
For optimum listening with 5.1-channel sound, all the speakers, except for the subwoofer, should be the same distance from the seating position. If you have to place the center or surround speakers closer to the seating position, adjust the delay time to make up for the difference.



1 Press [▲ ▼] to select the delay time box and press [ENTER].
2 Press [▲ ▼] to adjust the delay time and press [ENTER].

If either distance ⓐ or ⓑ is less than ⓒ, find the difference in the relevant table and change to the recommended setting.



ⓐ Center speaker

Difference	Setting
Approx. 34 cm (1 1/10 feet)	1.0 ms
Approx. 68 cm (2 1/5 feet)	2.0 ms
Approx. 102 cm (3 3/10 feet)	3.0 ms
Approx. 136 cm (4 2/5 feet)	4.0 ms
Approx. 170 cm (5 1/2 feet)	5.0 ms

ⓑ Surround speakers

Difference	Setting
Approx. 170 cm (5 1/2 feet)	5.0 ms
Approx. 340 cm (11 feet)	10.0 ms
Approx. 510 cm (16 1/2 feet)	15.0 ms

To finish the speaker setting
Press [◀] to select "Exit" and press [ENTER].

DVD

Play starts automatically if you insert a prerecorded tape or one that has had its tab removed.

Repeat until the jiggling stops.

Preparation
- Turn on the television and select the video input for the VHS.

SHIFT + REC Recording the television

See below for details.

Recording the television

1 Insert the tape you want to record to.

Ensure its tab is in place (➜ page 5).

2 Select the channel with the numbered buttons, [∧ CH] or [∨ CH].

- To select with the numbered buttons:
  e.g. channel 2: [0] ➜ [2]
  channel 23: [2] ➜ [3]
  channel 123: [100] ➜ [2] ➜ [3]

3 Press [SPEED] to select the tape speed.

SP→EP→VP

4 Press [SHIFT]+[● REC] to start recording.

"REC" lights on the unit's display.

To stop recording
Press [■].

To pause recording
Press [❚❚].
Press it again or press [SHIFT]+[● REC] to continue recording.

■ To specify a time to stop recording (➜ page 46, The sleep timer)

Note
- You cannot change channels while recording. You can change channels while paused.
- The unit will automatically return to the stop mode after a pause of 5 minutes while recording.
- Even if the tape you use is labeled "S-VHS", the recordings you make do not use this system.
- You cannot record from the disc section to the unit.

■ Tape speeds

There are three tape speeds.
SP: You can record the length shown on the tape.
EP: Three times the length of SP mode.
VP: Five times the length of SP mode.

- You cannot play tapes recorded with VP mode on other equipment.
- It takes more time for automatic tracking to work when playing tapes recorded with VP mode, and it may not work at all with some tapes. Do tracking manually if this is the case (➜ page 31).
- This unit can play tapes recorded with LP mode on other equipment ("LP" lights on the display).

VHS

Using another source while recording

You can watch and listen to other content when the unit is in timer recording standby or during VHS recording.

■ Television (➜ page 16)

1 During recording
Press [TV] to put the remote control in TV mode.
2 Press [TV/VIDEO] then select the channel with the numbered buttons, [∧ CH] or [∨ CH].

■ DVD (➜ page 18)

1 During recording
Press [DVD] to put the remote control in DVD mode.
2 Press [DVD/VHS] to select “DVD/CD”.
3 Insert a disc and start play.

■ Radio (➜ page 42)

1 During recording
Press [TUNER] to put the remote control in TUNER mode.
2 Press [FM/AM] to select the radio band.
3 Select the radio channel with the numbered buttons, [∧ CH] or [∨ CH].

Note

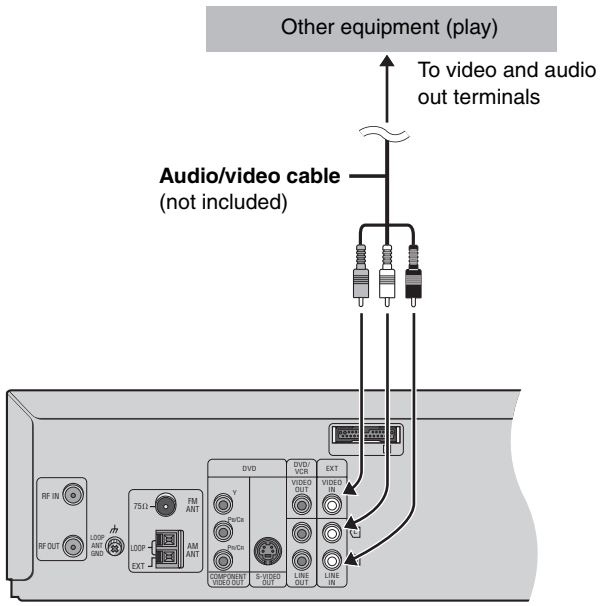
When you want to operate the VHS section again, be sure to press [VHS] to put the remote control in VHS mode.

Recording from other equipment

You can record from other video equipment (video cassette recorder, camera, etc.)

Preparation

- Connect the equipment to this unit’s input terminals.
  – Turn the unit off before making connections.
  – If audio output on the other equipment is monaural, use a stereo-monaural conversion cable (not included).
- Insert the tape, ensuring its tab is in place and find the place to start recording.



1 Press [∧ CH] or [∨ CH] to select “AU” channel.

2 Press [▶] (PLAY) to find the place to start recording.

3 Press [❚❚], then press [SHIFT]+[● REC] to put the unit in recording standby mode.

4 Press [SPEED] to select the tape speed.

SP→EP→VP
↑———————↓

5 Start play on the other equipment.

6 Press [❚❚] when you want to start recording.

To stop

Press [■].

■ To make a timer program to record from other equipment (➜ page 34)

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*Auto S nge function ➜ page 35

To check, correct, and cancel timer programs

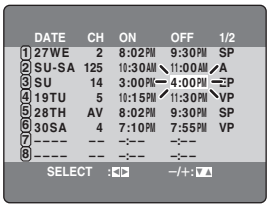
■ To check a program

1 Press [PROG].
The timer-programming screen appears.

■ To correct a program

While the timer programming screen is on the television,

1 Press [PROG] to highlight the program you want to correct and press [ENTER].
2 Select the item with [◄ ►] and correct it with [▲ ▼].


DATE CH ON OFF 1/2
1 27WE 2 8:02PM 9:30PM SP
2 SU-SA 125 10:30AM 11:00AM A
3 SU 14 3:00PM 4:00PM EP
4 19TU 5 10:15PM 11:30PM VP
5 28TH AV 8:02PM 9:30PM SP
6 30SA 4 7:10PM 7:55PM VP
7 ---- -- --:-- --:--
8 ---- -- --:-- --:--
SELECT :◄►
–/+:▼▲

■ To cancel a program

While the timer programming screen is on the television,

1 Press [PROG] to highlight the program you want to cancel.
2 Press [CANCEL].

To clear the timer programming screen
Press [MENU].

Auto SP/EP change

The unit switches tape speed to EP if it determines there is not enough tape to record the entire program in SP mode. The change may start at the beginning of the recording or part way through, depending on the remaining tape.
Before using this function, set the length of the tape you are using (➜ page 40). It may not work correctly if you use tapes with irregular lengths.

Example program combination

1st program (30 min.)		2nd program (60 min.)	
Example program combination			
30 min. at SP	15 min. at SP	45 min. at EP	(when using a 60-min. tape)

Note
This function does not guarantee recording of the entire program.

VHS

VHS Finding programs with the Jet Navigator and VHS Index Search System (VISS)

The unit saves the date, channel, time, and category of the recordings you make and shows them on the Jet Navigator list, making it easier to find and play them. It can save the data for up to 14 recordings on a tape, for 20 different tapes, and for a total of 50 recordings.

MENU — Saving Jet Navigator data

NAVI — Using the Jet Navigator to find programs

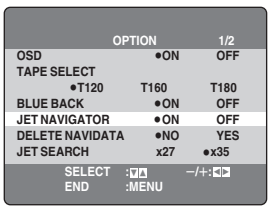
See below for details.

Saving Jet Navigator data

1 Press [MENU] to display the “VHS MENU” screen.

2 Press [▲ ▼] to select “OPTION” menu and press [ENTER].

3 Press [▲ ▼] to select “JET NAVIGATOR” and press [◄ ►] to change the setting to “ON”.



4 Press [▲ ▼] to select “TAPE SELECT” and press [◄ ►] to set the length of the tape you are using.

T120: T30, T60, T90, T120 tapes
T160: T140, T160 tapes
T180: T180 tapes

5 Record programs (➜ pages 32–34). The unit makes the list as you record.

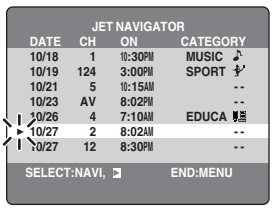
Using the Jet Navigator to find programs

1 Press [NAVI] to show the “JET NAVIGATOR” screen.

2 Press [NAVI] to highlight the program you want to watch.

The most recent program is highlighted first.

Once you have highlighted the program, wait about three seconds. The unit then starts searching for the program and starts play.



The channel, date, and time of a recording appear on the television when play starts.

To clear the Jet Navigator list
Press [MENU].

■ To delete the Jet Navigator on a video cassette tape

Keep [CANCEL] pressed for more than 5 seconds while the Jet Navigator list appears. “- -” appears on the list.

■ To delete all the Jet Navigator data stored in the unit’s memory (➜ page 40).

VHS

Setting categories

Set categories to make it easier to see what kind of programs are in the list.

1 Press [►] while the program you want to categorize is highlighted.

2 Press [▲ ▼ ◄ ►] to select a category and press [MENU] to confirm and return to the previous screen.

Category	Indication	Icon
Movie	MOVIE	
Music	MUSIC	
Drama	DRAMA	
Education	EDUCA	
Documentary	DOCUM	
Sports	SPORT	
Children	CHILD	
News	NEWS	
Others	OTHER	

To return to the Jet Navigator list
Press [MENU].

Note

- If you have already stored 14 programs on a tape and you then store another one, the new item is added and the oldest is deleted.
- "REMAINING PROGRAM 0 DELETE JET NAVIGATOR DATA" appears when you try to store more than fifty programs. The new item is added and the oldest item is deleted.
- "REMAINING CASSETTE 0 FOR JET NAVIGATOR DATA" appears when you try to store items for more than 20 tapes. Delete all the Jet Navigator data in the unit if you want to save the data for the tape (➜ page 40).
- The list does not appear when playing tapes recorded on other equipment.
- Parts of the list data are recorded on the tape. Take care when recording over older recordings that you do not overlap it. It is recorded within a few minutes either side of the beginning of the recording (longer if you used EP or VP).

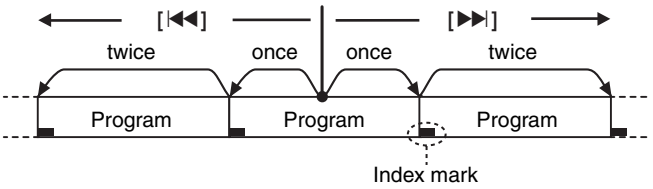
To demonstrate the Jet navigator function
Keep [NAVI] pressed for more than 5 seconds without inserting a cassette tape.

Finding programs—VHS Index Search System (VISS)

Use the index marks on a tape to find sections to play.
The unit adds index marks when recording starts. To add them manually during recording, press [SHIFT]+[● REC].

While stopped or during play

Press [|◄◄] (backward) or [►►|] (forward) to skip to the part you want to play.



The channel, date, and time of a recording appear on the television when play restarts.

- Up to 20 index signals can be searched for in both directions.
- You can reduce the number of skips by pressing the opposite button.
- This feature may not work correctly if the marks are too close together. Make recordings of at least 15 minutes (25 minutes in VP mode).

VHS

CHANNEL SET

The unit tunes automatically after you plug it in and turn it on for the first time (➜ page 15, Plug-in Auto Tuning), but you can start the process again if necessary.

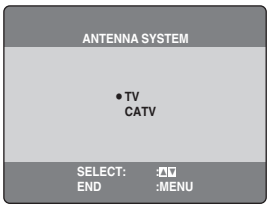
●Make sure you have tuned to a television channel. This does not work if you have selected “AU” channel.

1 Press [▲ ▼] to select “CHANNEL SET” and press [ENTER].

ANTENNA SYSTEM

2 Press [▲ ▼] to select “ANTENNA SYSTEM” and press [ENTER].

3 Press [▲ ▼] to select “TV” or “CATV” to suit the type of antenna you are using.



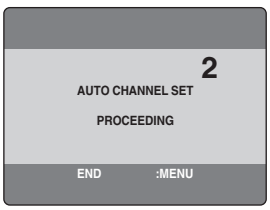
Channels are set corresponding to the antenna system you select. This is set automatically when you do Plug-in Auto Tuning.

To exit the settings screen
Press [MENU] until the screen disappears.

AUTO

Auto tuning searches for TV stations and memorizes every tuned program position. Other program positions are skipped. (Channel range ➜ right)

2 Press [▲ ▼] to select “AUTO” and press [ENTER].
Auto tuning starts. It takes three or more minutes to complete.



To stop partway through
Press [MENU].

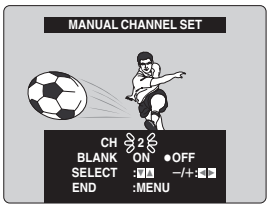
MANUAL

You can manually preset channels that are skipped when using the auto channel setting, and manually skip channels that are preset.

2 Press [▲ ▼] to select “MANUAL” and press [ENTER].

3 Press [▲ ▼] to select “CH” and [◄ ►] to select the channel.

4 Press [▲ ▼] to select “BLANK” and [◄ ►] to select “ON” or “OFF”.



To exit the settings screen
Press [MENU] until the screen disappears.

■ Channel range

●TV mode

Band	Airwaves
VHF	2–13
UHF	14–69

●CATV mode

Band	Cable
VHF	2–13
CATV LOW BAND	95–99
CATV MID/SUPER BAND	14–36
CATV HYPER BAND	37–65
ULTRA BAND	66–94
	100–125
SPECIAL CATV CHANNEL	1

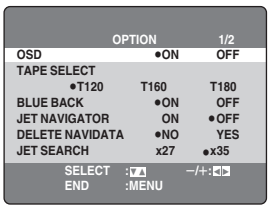
VHS

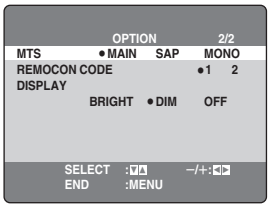
OPTION

1 **While VHS MENU is displayed (➜ page 38)**

Press [▲ ▼] to select the "OPTION" and press [ENTER].

2 **Press [▲ ▼] to select the item and press [◄ ►] to change the setting (➜ below).**





To exit the settings screen
Press [MENU] until the screen disappears.

REMOTE CONTROL

Panasonic video cassette recorders use the same remote control system so they may respond unintentionally to a command from this remote control. Change the code on this unit and its remote control (the two must match) if you place another Panasonic video cassette recorder close together.
●Use "1", the factory preset, under normal circumstances.

1 **While OPTION menu is displayed**

Press [▲ ▼] to select the "REMOTE CONTROL" and press [ENTER].

2 **Press [◄ ►] to select the code (1 or 2) and press [ENTER].**
The remote control code on the unit has been set.

3 **While pressing [ENTER] on the remote control, press and hold the numbered button ([1] or [2]) corresponding to the code you selected in step 2.**
The remote control code on the remote control has been set.

The following is displayed when you use a remote control with the different code.

The unit's remote control code

Change its code to match the unit's (➜ step 3).

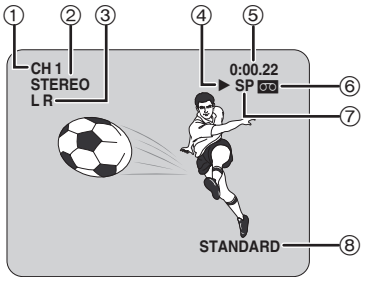
Items	**Settings** (Underlined items are the factory preset.)
OSD (➜ page 41, On-screen display)	ON: Messages appear on the television for about five seconds after you perform operations. OFF: Messages do not appear.
TAPE SELECT Set the length of tape you are using so the unit can show the correct remaining time.	T120: T30, T60, T90, T120 tapes T160: T140, T160 tapes T180: T180 tapes
BLUE BACK	ON: The screen shows a blue background when you play unrecorded portions. OFF
JET NAVIGATOR (➜ page 36)	ON: Jet Navigator data automatically registered. OFF: Data not registered.
DELETE NAVIDATA Delete all the Navigation data registered in the unit. See page 36 to delete data on a single tape.	NO YES: Then press [ENTER] when you want to delete all the Jet navigator data.
JET SEARCH (➜ page 30) Set the speed for JET SEARCH when playing EP and VP tapes.	×27 ×35 Select ×27 if the picture is poor at ×35.
MTS (➜ page 41, Changing audio) Set the MTS (Multi-channel Television Sound Stereo) reception type.	MAIN: To receive stereo broadcasts. SAP: To receive SAP when being broadcast. MONO: To receive monaural broadcasts (e.g., when reception is poor).
REMOTE CONTROL	1 2
DISPLAY Set the brightness of the unit's display when the unit is in standby mode.	BRIGHT: The display is bright all the time. DIM: The display dims when the unit is in standby mode. OFF: The display turns off when the unit is in standby mode.

On-screen display

To see these displays, set the OSD item in the OPTION menu to ON.

Press [OSD/DISPLAY].

The time and operation details appear on the screen for about 5 seconds.



①	**Channel display** Displays the cable television channel or television channel currently being received.
②	**STEREO/SAP indication** Indicates when a program is broadcast in stereo or SAP. ➜ right for audio type details.
③	**L and R indicators** The Left (L) and Right (R) indicators show which sound mode is selected as follows: Stereo: Both the L and R indicators appear. L: The L indicator appears. R: The R indicator appears. Normal: Neither the L and R indicator appears.
④	**Tape running display** Shows operations taking place.
⑤	**Shows the time and tape counter** Press [OSD/DISPLAY]. The display changes as follows. Present time→Tape counter→Remaining tape time Using index search: “S 01” to “S 20” is displayed. Using jet rewind: “J.REW” is displayed. ●Press [SHIFT]+[RESET] to reset the tape counter (elapsed time) to “0:00.00”. ●The remaining time is approximate. It will be incorrect if you set the wrong tape time in the TAPE SELECT item in the OPTION menu and if the tape is of poor quality.
⑥	**Cassette in indicator** Shows whether you have loaded a cassette.
⑦	**Tape speed indicator** (➜ page 32)
⑧	**Picture mode indicator** (➜ page 31)

Note

- These displays do not appear when paused or during slow play.
- The on-screen display may be disturbed depending on the playback tape or the input signal.

Changing audio

When a stereo and/or SAP broadcast is received, “STEREO” and/or “SAP” appear showing the type of broadcast.

To change the audio

Press [SHIFT]+[AUDIO].

The audio changes as follows:

- When playing a tape:
  LR→L→R→Normal audio track
- While watching the television:
  LR→L→R

The table below shows the TV broadcast type, “MTS” settings, and audio recording patterns.

TV broadcast	MTS setting	Audio track		
		Normal (Mono)	Hi-Fi	
			Left	Right
Mono	MAIN or SAP	Mono	Mono	Mono
Stereo	MAIN or SAP	L+R (Mixed)	Left	Right
Mono and SAP	MAIN	Mono	Mono	Mono
	SAP	Mono	Mono	SAP
Stereo and SAP	MAIN	L+R (Mixed)	Left	Right
	SAP	L+R (Mixed)	L+R (Mixed)	SAP

Be sure that “MTS” is set to “MAIN” or “SAP” to record on the Hi-Fi audio tracks.

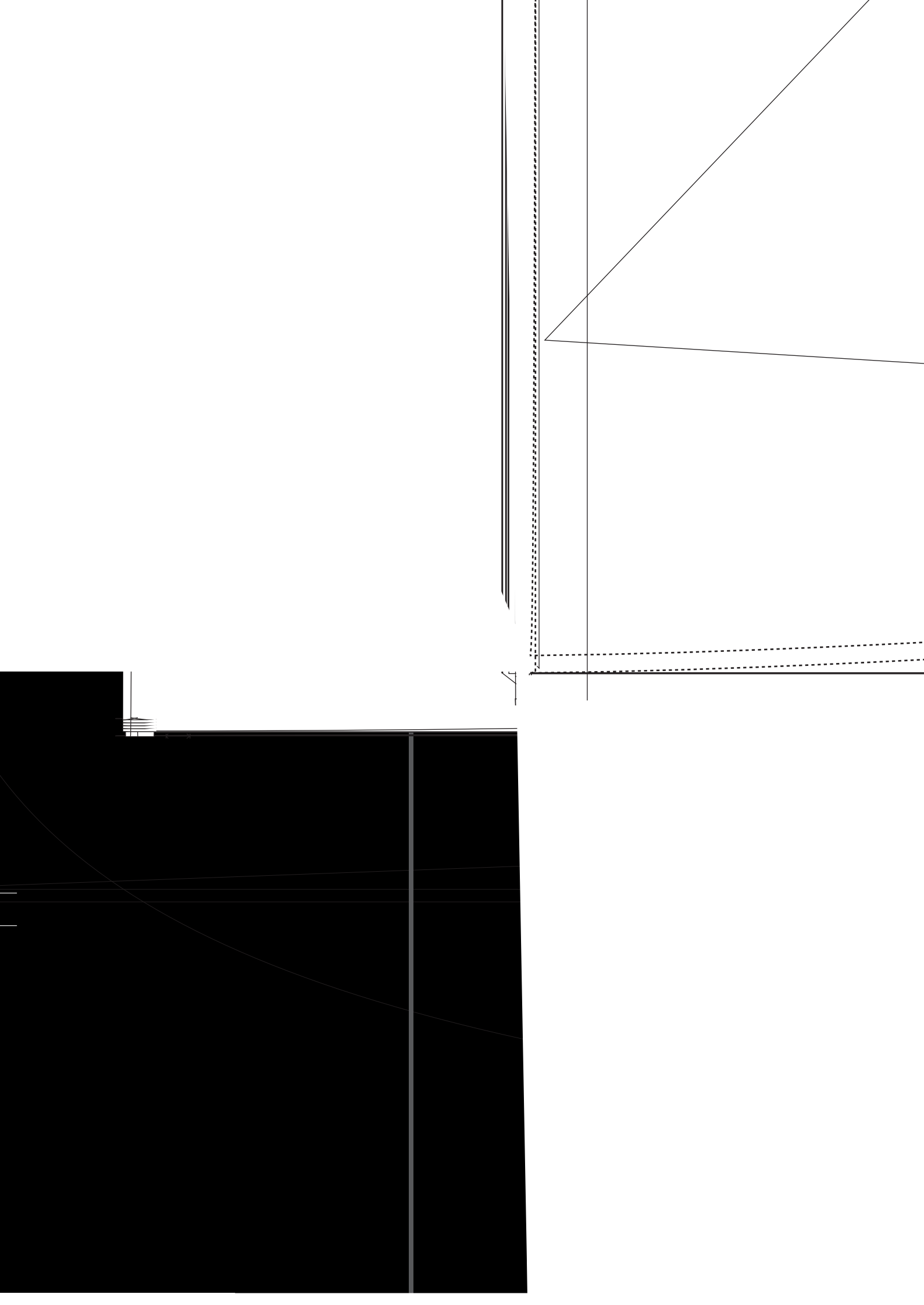
Note

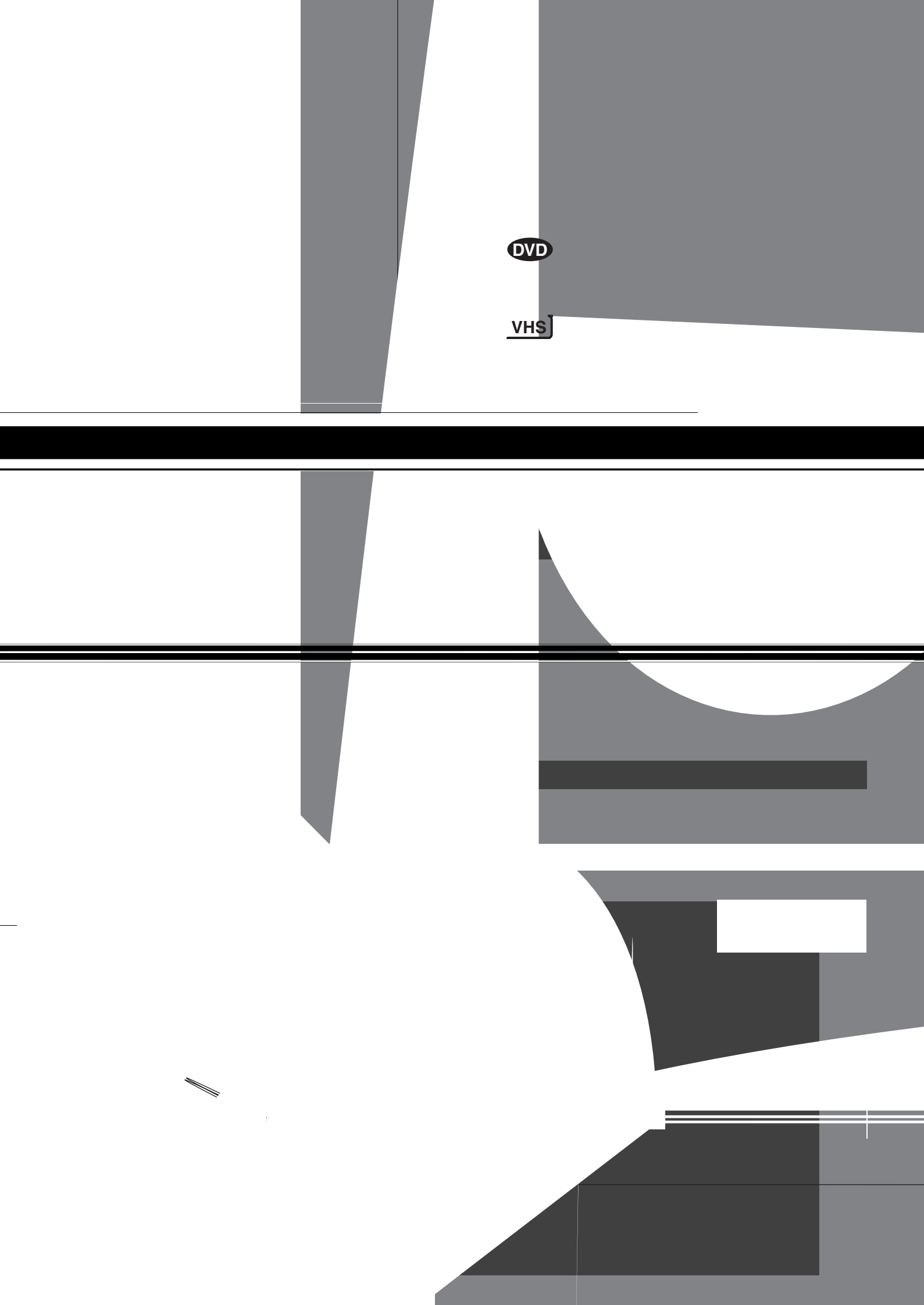
- Switch to “MONO” for viewing or recording if a stereo or SAP broadcast is impaired by poor reception.
- To resume stereophonic recording, set “MTS” to “MAIN” or “SAP”.

Auto bilingual choice function

When you play back recordings of stereo or SAP broadcasts, these audio types are automatically selected. The unit may select a different type if you start play midway through the program. Press [SHIFT]+[AUDIO] to change the type if this occurs.
This function does not work if:
–The tape was recorded on a deck without this system.
–The tape is a recording from external equipment.

VHS




DVD
VHS

SHIFT + C.S.M SFC — DVD only
Custom Sound Memory
Stores up to 30 sound setting (one setting per disc).

SHIFT + MIX 2CH SUBTITLE — DVD only
Down-mixing
Down-mixes multi-channel signals to 2 channels.

MULTI RE-MASTER SUBWOOFER LEVEL
Subwoofer level
Adjusts the amount of bass.

SHIFT + TEST CH SELECT
Speaker level adjustments

See below for details.

Custom Sound Memory

DVD-A DVD-V VCD CD

Available sound settings:
Dolby Pro Logic II, Subwoofer level, Center Focus, Sound Field Control, Super Surround

After making the sound field or sound quality settings

Press and hold [SHIFT]+[C.S.M].

■ Recall the settings

The unit recalls the settings when you play the disc again.

- The settings are replaced if you change them.
- When you store settings for the 31st disc, the settings for the earliest disc are cleared.
- Press [SHIFT]+[C.S.M] while "CSM" is displayed and the settings return to those that were current before the settings were recalled.
- Press [SHIFT]+[C.S.M] while "CSM" is out and you are playing a disc for which you stored settings and those settings are recalled.

Down-mixing

You can output the down-mixed 2 channel signal when necessary (e.g. when you intent to record 5.1ch sound on other recording equipment).

Press [SHIFT]+[MIX 2CH].

To cancel
Press [SHIFT]+[MIX 2CH] again.

Note
When "D.MIX" flashes on the display, the disc contains multiple-channel signals that cannot be down-mixed. DVD-A

Subwoofer level

Press [SUBWOOFER LEVEL].

SUB W 1→SUB W 2→SUB W 3→SUB W 4 (factory preset)

Speaker level adjustments

This is the one of ways to get the appropriate surround effect. Adjust the speaker level to the same level as the front speakers.

1 Press [SHIFT]+[TEST] to output a test signal.

Lch: Front left
Cch: Center
Rch: Front right
RSch: Right surround
LSch: Left surround

- There is no output from SW (subwoofer) channel.

2 Press [VOLUME, +] or [−] to set the volume level normally used for listening.

3 Press [▲] (increase) or [▼] (decrease) to adjust the speaker level for each speaker.

C, RS, LS: −6 dB to +6 dB
(L, R: Only the balance is adjustable.)

- **To adjust the balance of the front speakers**
  While outputting the test signal, press [◄ ►].

To stop the test signal
Press [SHIFT]+[TEST] again.

■ To adjust speaker level during play

1 Press [CH SELECT] to select the speaker.

L→C→R→RS→LS→SW
↑_____↓

SW: Subwoofer

- You can only adjust SWch if the disc includes a subwoofer channel.
- SWch does not appear on the display and is not adjustable when Dolby Pro Logic II or Dolby Pro Logic turned on.

2 Press [▲] (increase) or [▼] (decrease) to adjust the speaker level for each speaker.

C, RS, LS, SW: −6 dB to +6 dB
(L, R: Only the balance is adjustable.)

- **To adjust the balance of the front speakers**
  During play, press [◄ ►].

RADIO & OTHERS

Press [SHIFT]+[SLEEP] to select the (in minutes).

SLEEP 30 ⟶ SLEEP 60 ⟶ SLEEP 90
↑ OFF ⟵ SLEEP 120 ⟵

To cancel the timer
Press [SHIFT]+[SLEEP] to select "OFF".

To confirm the remaining time
Press [SHIFT]+[SLEEP] again.

To change the setting
Repeat the procedure from the beginning.

- The VHS's timer program recording will be turned off by the sleep timer.

Press [MUTING].

To cancel
Press [MUTING] or turn the volume to minimum (−∞ dB), then raise the volume level.
Muting is also cancelled and switch the unit is turned off.

Adjust headphone volume with [VOLUME DOWN, UP].

- Audio is automatically switched to stereo (2-channel).

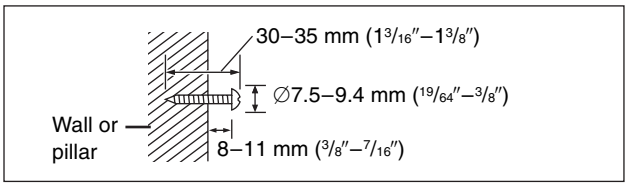
Note
Avoid listening for prolonged periods of time to prevent hearing damage.

Attaching to a wall

Note

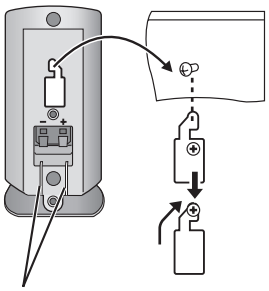
- The wall or pillar on which the speakers are to be attached should be capable of supporting 10 kg (22 lb.) per screw.
  Consult a qualified building contractor when attaching the speakers to wall. Improper attachment may result in damage to the wall and speakers.
- Do not attempt to attach these speakers to walls using methods other than those described in this manual.

1 Drive a screw (not included) into a wall.



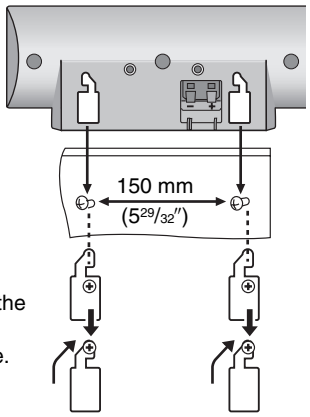
2 Fit the speaker securely onto the screw(s) with the hole(s).

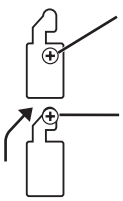
Front and surround speakers



So that the speaker fits up against the wall squarely, be sure to press the speaker cable down into the groove.

Center speaker





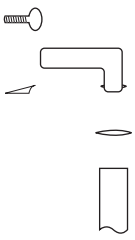
In this position, the speaker will likely fall if moved to the left or right.

Move the speaker so the screw is in this position.

Fitting speaker stands (not included)

Ensure the stands meet these conditions before purchasing them. Observe the diameter and length of the screws and the distance between screws as shown in the diagram.

- The stands must be able to support over 10 kg (22 lb.).
- The stands must be stable even if the speakers are in a high position.



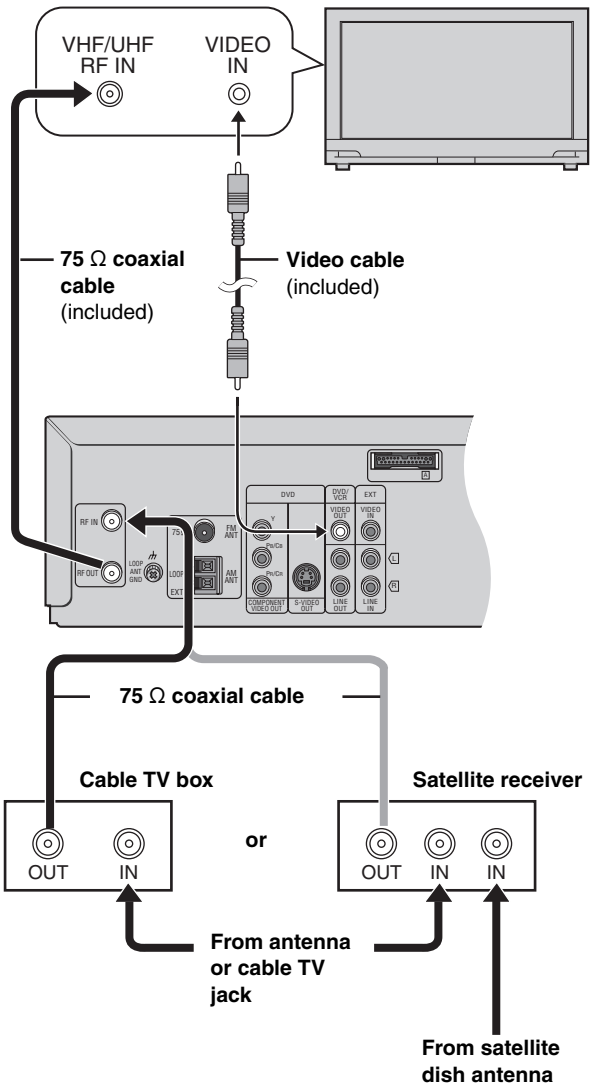
INFO

- The equipment connections described are examples.
- Peripheral equipment and optional cables sold separately unless otherwise indicated.
- Before connection, turn off all equipment and read the appropriate operating instructions.

Connecting a cable TV box/satellite receiver

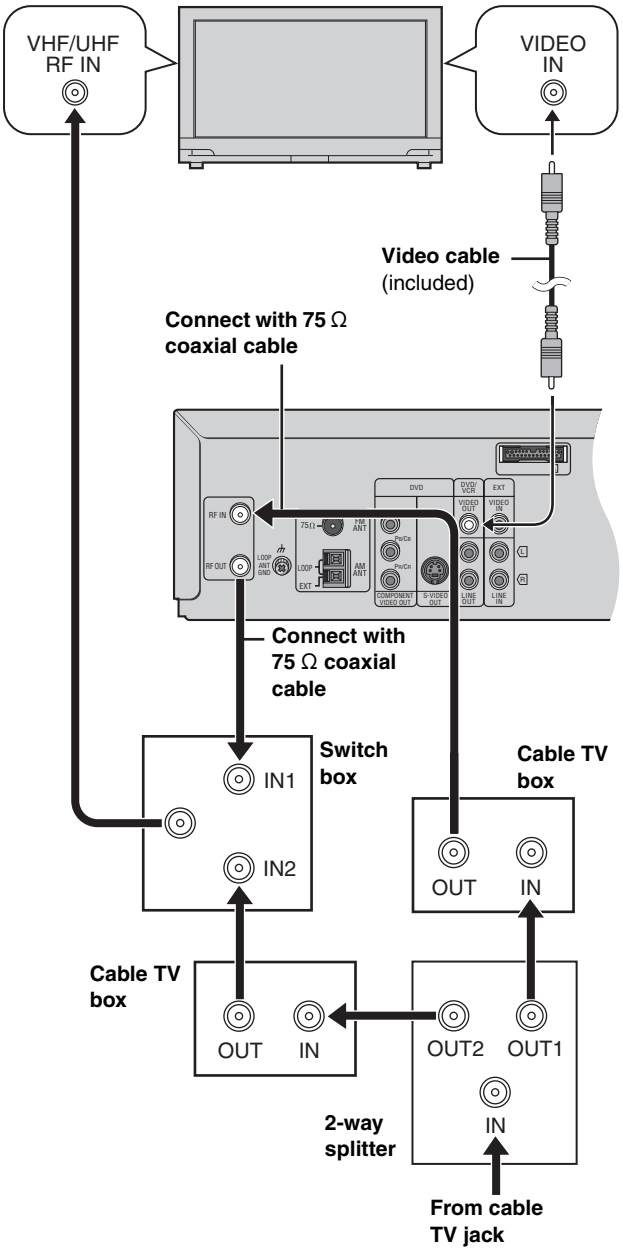
- You need to subscribe to a cable TV or satellite TV service, to enjoy viewing their programming.
- Consult your service provider regarding appropriate cable TV box or satellite receiver.
- Select the applicable input on your television to view the output from your cable TV box/satellite receiver through this unit.
- The signal from the cable TV box or satellite receiver passes through this unit to the television even when this unit is turned off.
- Change the video input on the television when you want to watch another program while recording.
- You cannot do a timer recording unless the channel is first selected on the cable TV box or satellite receiver.

One cable TV box/satellite receiver



Two cable TV boxes

You can record and view both scrambled and unscrambled channels if connections are made as shown in the diagram below.



Note

When a home satellite system (Dishnetwork/DSS) is connected, auto tuning and auto clock setting may not operate properly. Set the clock manually (➜ page 38).

INFO

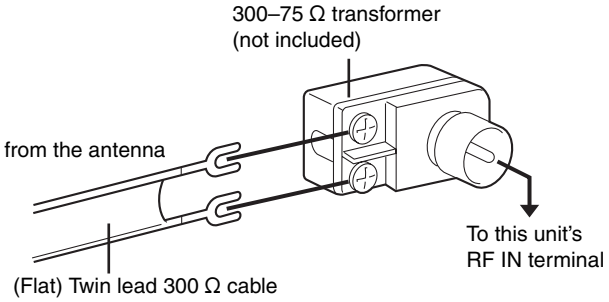
If the antenna connector doesn't match

Other antenna connections to the unit

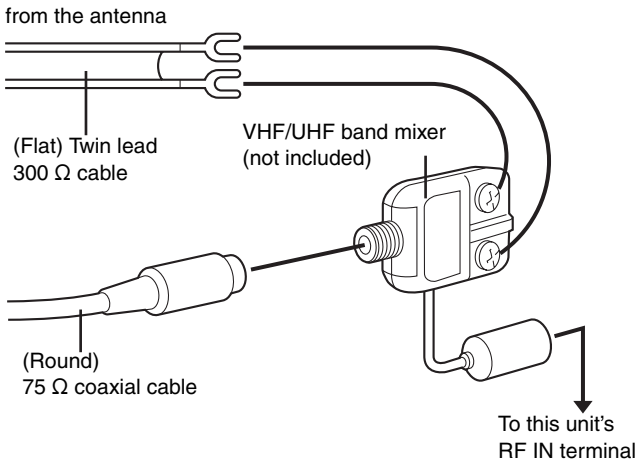
Use one of the following connections to suit the antenna lead.

■ A single twin lead

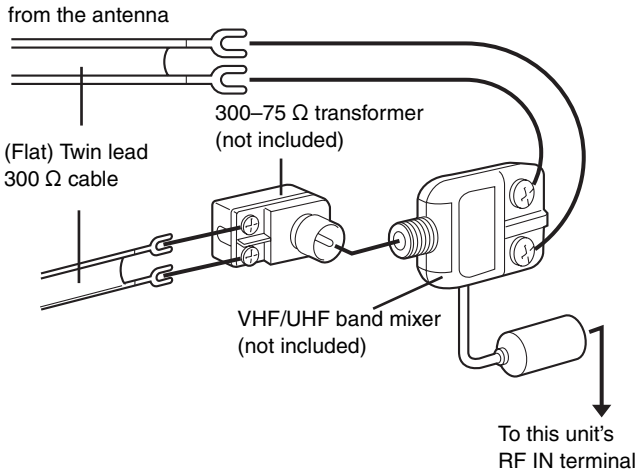
- If your television has both lead and coaxial VHF terminals, use the lead connection to minimize signal loss.



■ A twin lead and a coaxial cable



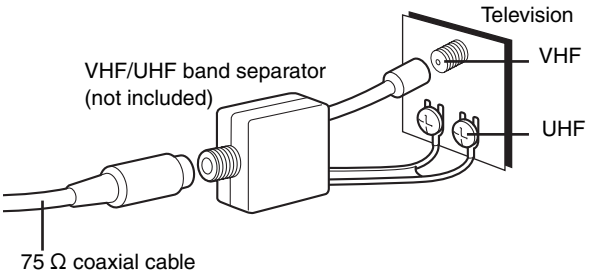
■ Two twin leads



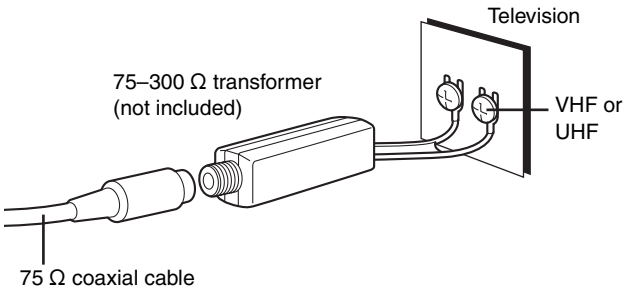
Other antenna connections from the unit to the television

Use one of the following connections to suit the antenna terminals on your television. Refer to the television's operating instructions.

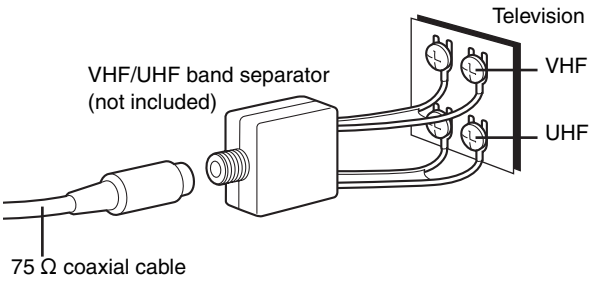
■ A twin lead and coaxial plug terminal



■ A twin lead terminal

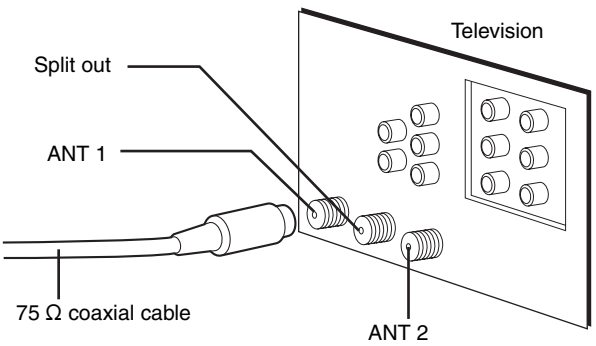


■ Two twin lead terminals



■ Multiple antenna terminals

- Connect to one of the ANTterminals, then change the television's setting as necessary.



INFO

Troubleshooting guide

Before requesting service, make the following checks. If you are in doubt about some of the check points, or if the remedies indicated in the chart do not solve the problem, refer to the "Customer Services Directory" on page 54 if you reside in the U.S.A., or refer to the "Product information" on page 55 if you reside in Canada.

Power

		Page
No power.	●Insert the AC power supply cords and system cable securely.	**14**
The unit is automatically switched to the standby mode.	●The Sleep timer functioned.	**46**

No operation

No response when any buttons pressed.	●This unit cannot play discs other than the ones listed in these operating instructions. ●The unit may not be operating properly due to lightning, static electricity or some other external factor. Turn the unit off and then back to ON. Alternatively, turn the unit off, disconnect both AC power supply cords, and then reconnect them. ●Condensation has formed: Wait 1 to 2 hours for it to evaporate.	**6** **—** **—**
No response when remote control buttons pressed.	●Check that the batteries are installed correctly. ●The batteries are depleted: Replace them with new ones. ●Point the remote control at the remote control sensor and operate.	**4** **4** **18**
No picture or sound.	●Check the video and audio connection. ●Check the power or input setting of the connected equipment. ●Check that the DVD-RAM has something recorded on it.	**11–14** **—** **—**
You have forgotten your ratings password. Reset all the settings to Factory Preset.	●While stopped and "DVD/CD" is the source, press and hold [◀◀ ⊖/REW], [▶] (PLAY) (DVD) and [▲OPEN/CLOSE] on the main unit until "Initialized" disappears from the television. Turn the unit off and on again. All settings will return to the default values.	**—**
Cannot operate the VHS.	●Press [VHS] to switch the remote control mode to VHS. ●The unit is in timer recording standby ("⏲" is on on the unit's display). ●The remote control and main unit are using different codes. Change the code on the remote control.	**—** **34** **40**
Cannot operate the TV.	●Press [TV] to switch the remote control mode to TV. ●Check the TV maker setting.	**—** **16**
Cannot operate the DVD.	●Press [DVD] to switch the remote control mode to DVD.	**—**
Television reception worsens after connecting the unit.	●This can occur because the signals are being divided between the unit and the television. You can solve this with a signal booster, available from audio-visual suppliers. Consult your dealer if reception does not improve.	**—**
Cannot eject cassette.	●The unit is recording or in timer recording standby mode. If you need to eject the tape, press [⏲] first so "⏲" goes out.	**34**

Specific operation impossible or incorrect

It takes time before play starts. MP3	●Play may take time to begin when an MP3 track has still picture data. Even after the track starts, the correct play time will not be displayed, however this is normal.	**—**
Programmed items are not played. DVD-V	●Some items will not be played even if you have programmed them.	**—**
A menu screen appears during skip or search. VCD	●This is normal for Video CDs.	**—**
The on-screen menu shows "2" as a soundtrack option when [AUDIO] is pressed, but the audio does not change. DVD-A	●Even if a second soundtrack isn't recorded, two numbers will normally be shown.	**—**
Play restarts from the beginning of the track when soundtrack is changed. DVD-A	●This is normal on DVD-Audio.	**—**

Subtitle

Subtitle position is wrong.	●Adjust the position. ("Subtitle Position" in Display Menu)	**27**
No subtitles.	●Display the subtitles.	**20**
The subtitles overlap closed captions recorded on discs.	●Clear the subtitles.	**20**

Marker

Cannot add markers.	●You cannot add markers while playing a play list or if the disc's play time doesn't appear on the unit's display.	**—**

A-B repeat

Point B is automatically determined.	●The end of an item becomes point B when it is reached.	**—**
A-B repeat is automatically canceled.	●A-B repeat is canceled when you press [QUICK REPLAY].	**—**

Menu

The Setup menu cannot be accessed.	●Select "DVD/CD" as the source. ●Cancel all group, program and random play.	**—** **22**

INFO

Picture incorrect

Picture distorted.	●Ensure that the unit is connected directly to the television, and is not connected through an A/V selector or other equipment.	**12**
The television may display incorrectly or colors appear faded.	●The unit and television are using different video systems. Use a multi-system or NTSC television. ●The system used on the disc doesn't match your television. PAL discs cannot be played. This unit converts DVD-Audio recorded in PAL to NTSC for play, however, play may not function properly.	**—** **—**
The picture on the television disappears or stripes appear on the screen.	●Mobile telephone chargers can cause some disturbance. ●The location and orientation of the antenna are incorrect. If you are using an indoor antenna, change to an outdoor antenna. ●The television antenna wire is too close to the unit. Separate the antenna wire of the television from the unit.	**—** **43** **—**

Disc picture incorrect

Picture size doesn't fit the screen.	●Change "TV Aspect" in "Video" tab. ●Use the television to change the aspect. If your television does not have that function, change "4:3 Aspect" in Display Menu. ●Change the Zoom setting.	**28** **27** **20**
Menus not displayed correctly.	●Restore the zoom ratio to × 1.00. ●Set "Subtitle Position" in Display Menu to "0". ●Set "4:3 Aspect" in Display Menu to "Normal".	**20** **27** **27**
Auto zoom function does not work well.	●Turn off TV's zoom function. ●Use the other preset aspect ratios or manual adjustment. ●Zoom function may not work well, especially in dark scenes and may not work depending on the type of disc.	**—** **20** **—**

VHS picture incorrect

The picture is noisy or is in black and white. **Horizontal bars or lines run down the screen.**	●Adjust the tracking. ●Make sure the television's input setting is correct. ●The video heads are dirty: clean them with a head-cleaning cassette. ●The video heads are worn: consult your dealer. ●The tape is old or damaged. ●You cannot correctly play tapes recorded with other systems (e.g., PAL).	**31** **—** **52** **—** **—** **—**
Picture is distorted when stilled or during slow-motion.	●Some distortion is normal with tapes recorded using VP mode.	**—**
The blue back appears during play.	●You are playing a blank or poor quality part of the tape. ●You can damage the unit if you play dirty or damaged tapes and this can cause the blue back to appear. Consult your dealer.	**—** **—**
The picture jiggles.	●Adjust the vertical hold.	**31**

Progressive video

There is ghosting when progressive output is on.	●Change "Video Output Mode" in Picture Menu to "480I". This problem is caused by the editing method or material used on DVD-Video, but should be corrected if you use interlace output.	**27**
Pictures not in progressive output.	●If the unit is connected to the television through VIDEO OUT or S-VIDEO OUT output will be interlace. ●Press [SHIFT]+[PROGRESSIVE] on the main unit. Then, select "480P" in "Video Output Mode" in Picture Menu.	**—** **18, 27**
Closed captions not displayed.	●When progressive output is on, closed captions will not be displayed.	**—**

Sound incorrect

Sound distorted.	●Noise may occur when playing WMA files.	**—**
Folders deeper than the eighth layer on a data CD are not displayed correctly.	●Folders deeper than the eighth layer are displayed as the eighth layer.	**—**
Effects do not work.	●Some audio effects do not work or have less effect with some discs. ●Multi Re-master and Dolby Pro Logic **II** do not work if you have changed the play speed.	**—** **21**
Humming heard during play.	●An AC power supply cord or fluorescent light is near the subwoofer. Keep other appliances and cords away from the subwoofer.	**—**
There is noise when playing a video tape.	●Adjust the tracking. ●The tape is old or damaged.	**31** **—**

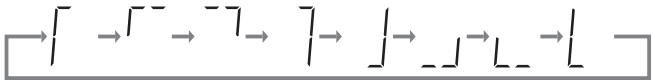
Listening to the radio

Noise is heard. **"ST" flickers or doesn't light.** **Sound is distorted.**	●Adjust the position of the FM or AM antenna. ●Use an outdoor antenna.	**—** **43**
A beat sound is heard.	●Turn the television off or separate it from the unit.	**—**
A low hum is heard during AM broadcasts.	●Separate the antenna from other cables.	**—**

Recording

“ ” flashes when I try to start recording. Cannot record.	●If the erasure prevention tab has been removed, cover the hole with adhesive tape.	**5**
Timer recording doesn’t record a program correctly.	●Check the clock and calendar. ●Set the channel and start and end times correctly. ●Be sure to press [⏲] after programming to put the unit in timer recording standby. ●Program times may be overlapped.	**—** **—** **34** **—**
Cannot record from other equipment.	●Press [∧ CH] or [∨ CH] to Select “AU”. ●Check the connections to the other equipment.	**33** **33**
Black bands appear in the recording.	●Move the other equipment away from the television as it may be picking up interference.	**—**
The copy of a videotape or DVD is very poor.	●This unit complies with industry standards regarding the recording and duplication of copy-protected material. This includes commercial videotapes and DVDs. Consequently, copying not only infringes copyright laws but also presents serious technical difficulties. Even in cases where a copy can be made, the quality will be very poor.	**—**

Unit display

The unit’s display disappears or fades once the unit is turned off.	●The DISPLAY setting is set to “DIM” or “OFF” under OPTION from the VHS MENU. Select “BRIGHT” if you want the display bright all the time.	**40**
The tape counter isn’t changing.	●The tape counter does not change while playing unrecorded parts.  ●The display also appears like this if the tape is dirty or damaged. Consult your dealer if this is the case.	**—** **—**
“NoPLAY”	●You inserted a disc the unit cannot play; insert one it can. ●You inserted a blank disc.	**6** **—**
“NoDISC”	●You haven’t inserted a disc; insert one. ●You haven’t inserted the disc correctly; insert it correctly.	**—** **18**
“F61”	●Check and correct the speaker cord connections. If this does not fix the problem, there is a power supply problem. Consult the dealer.	**11, 14**
“U11”	●Disc is dirty. Wipe it clean.	**6**
“U15”	●You inserted a DVD-R that has not been finalized.	**6**
“ERROR”	●Incorrect operation performed. Read the instructions and try again.	**—**
“U30”	●The remote control and main unit are using different codes. Change the code on the remote control.	**40**
“H□□”, “F□□” □□ stands for a number.	●Trouble may have occurred. The number following “H” or “F” depends on the status of the unit. Turn the unit off and then back to ON. Alternatively, turn the unit off, disconnect both AC power supply cords, and then reconnect them. ●If the service numbers fail to clear, note the service number and contact a qualified service person.	**—** **—**

Television display

“⃠”	●The operation is prohibited by the unit or disc.	**—**
“Cannot display group xx, content xx”	●You are trying to display incompatible contents.	**25**
“This disc may not be played in your region”	●You can only play DVD-Video if their region number is “1” or includes the same region number as the unit or if the DVD-Video is marked “ALL”.	**Cover**
No on-screen display.	●Select “On” in “On-Screen Messages” in “Display” tab. ●Select “ON” in “OSD” of “OPTION” setting in the VHS MENU.	**29** **40**
The menu is displayed in a different language.	●Select the preferred language in “Menus” in “Disc” tab. ●Select the preferred language in “LANGUAGE” in the VHS MENU.	**28** **38**

INFO

Maintenance

Clean this unit with a soft, dry cloth.

- Never use alcohol, paint thinner or benzine to clean this unit.
- Before using chemically treated cloth, read the instructions that came with the cloth carefully.

Cleaning the video heads

Dirt on the video heads can cause poor recording and play.

To clean the heads, insert and eject a tape 5 to 10 times in succession.

If the picture does not improve, use an optional head-cleaning cassette (part number NV-TCL30PT). If the problem persists, seek advice from a qualified service person.

Undecided

■ AMPLIFIER SECTION

RMS output power, 10 % total harmonic distortion

1 kHz FL/FR	55 W per channel 6 Ω
1 kHz Center	160 W per channel 6 Ω
1 kHz SL/SR	55 W per channel 6 Ω
100 Hz Subwoofer	220 W per channel 4 Ω
Total RMS Dolby Digital mode power	600 W

FTC output power, 1 % total harmonic distortion

120 Hz–20 kHz FL/FR	30 W per channel 6 Ω
120 Hz–20 kHz Center	110 W per channel 6 Ω
120 Hz–20 kHz SL/SR	30 W per channel 6 Ω
45 Hz–120 Hz Subwoofer	140 W per channel 4 Ω
Total FTC power in Dolby Digital mode (Band 1 % THD)	370 W

Input sensitivity	
AUX	250 mV
Input impedance	47 kΩ

■ SPEAKER SECTION

Front/Surround speakers SB-FS520A

Type	1 way, 1 speaker, Bass-ref.
Speakers	
Full range	6.5 cm ($2^{1}/_{2}$″), cone type, 6 Ω
Input power	60 W (Music)
Output sound pressure level	82 dB/W (1.0 m)
Frequency range	88 Hz–25 kHz (−16 dB) 100 Hz–22 kHz (−10 dB)
Dimensions (W×H×D)	90×180×112.4 mm ($3^{9}/_{16}$″×$7^{3}/_{32}$″×$4^{7}/_{16}$″)
Mass	0.73 kg (1.61 lb.)

Center speaker SB-PC820

Type	1 way, 2 speaker, Bass-ref.
Speakers	
Full range	6.5 cm ($2^{1}/_{2}$″), cone type, 6 Ω
Input power	160 W (Music)
Output sound pressure level	83 dB/W (1.0 m)
Frequency range	97 Hz–25 kHz (−16 dB) 125 Hz–22 kHz (−10 dB)
Dimensions (W×H×D)	300×103×116.7 mm ($11^{13}/_{16}$″×$4^{1}/_{16}$″×$4^{19}/_{32}$″)
Mass	1.31 kg (2.89 lb.)

Subwoofer SB-WA820P

Type	1 way, 1speaker, Bass-ref.
Speaker unit	
Woofer	17 cm ($6^{3}/_{4}$″), cone type, 4 Ω
Input power	220 W (Music)
Output sound pressure level	80 dB/W (1.0 m)
Frequency range	32 Hz–220 Hz (−16 dB) 36 Hz–190 Hz (−10 dB)
Dimensions (W×H×D)	209×360.5×463 mm ($8^{7}/_{32}$″×$14^{7}/_{32}$″×$18^{7}/_{32}$″)
Mass	11.5 kg (25.4 lb.)

■ DISC SECTION

Disc played	(one layer per side)
DVD-VIDEO/AUDIO	8 cm/12 cm, single/double-sided, single/double layer
CD/VCD/MP3/WMA	8 cm/12 cm, CD-R/RW
DVD-RAM/R (DVD-VIDEO formatted discs)	
HighMAT	Level 2 (Audio and Image)
Video	
Signal system	NTSC
Output level	Composite video; 1 Vp-p (75 Ω) S-video; 1 Vp-p (Y), 0.286 Vp-p (C) (75 Ω) Component video; 1 Vp-p (Y) (75 Ω) 0.7 Vp-p (P_B/C_B, P_R/C_R) (75 Ω)
Audio	
Sampling frequency	
CD	44.1 kHz
MP3	32 kHz, 44.1 kHz, 48 kHz
DVD	48 kHz, 96 kHz (video), 192 kHz (audio)
Bitrate	
MP3	32–320 kbps
Decoding	16/20/24 bit linear
Pick up	
Beam Source	Semiconductor Laser
Wavelength	
CD/VCD	785 nm
DVD	662 nm
Number of channels	5.1 ch (FL, FR, SL, SR, C, SW)
Frequency response	20 Hz–20 kHz (+1, −2 dB)
Wow and flutter	Less than possible measurement data
Digital filter	8 fs
D/A converter	Delta sigma DAC

■ VHS SECTION

Video recording system	2 rotary heads, helical scanning system
Video heads	4 heads
Audio heads	2 heads
Tape speed	SP; 33.35 mm/s, EP; 11.12 mm/s, VP; 6.66 mm/s
Tape format	VHS tape
Recording/playback time	SP; 120 min. with NV-T120 EP; 360 min. with NV-T120
FF/REW time	Approx. 54 s. with NV-T120 (FF/REW) Approx. 36 s. with NV-T120 (JET REW)
VIDEO	
Television system	EIA; Standard (525 lines, 60 fields), NTSC color signal
Modulation system	Luminance; FM azimuth recording Color signal; converted subcarrier phase shift recording
Input level	VIDEO IN (PHONO); 1 Vp-p, 75 Ω
Output level	VIDEO OUT (PHONO); 1 Vp-p, 75 Ω
Antenna receive input	VHF 2–13 CH, 75 Ω UHF 14–69 CH, 75 Ω CATV 5A and A-5–EEE CH, 75 Ω
AUDIO	
Input level	AUDIO IN (PHONO); −10 dBV, 47 kΩ
Output level	AUDIO OUT (PHONO); −8 dBV, 1 kΩ
Audio track	1 track (normal-mono only), 2 channels (Hi-Fi sound stereo)
Video horizontal resolution	Color; more than 200 lines
Signal-to-Noise ratio	Video; more than 40 dB/SP Audio; more than 60 dB/Hi-Fi
Audio frequency response	20 Hz–20 kHz/Hi-Fi
Wow and flutter	0.005 % Wrms/Hi-Fi

■ FM TUNER SECTION

Frequency range	87.9–107.9 MHz (200-kHz step) 87.5–108.0 MHz (100-kHz step)
Sensitivity	2.5 µV (IHF)
S/N 26 dB	2.2 µV
Antenna terminals	75 Ω (unbalanced)
Preset station	15

■ AM TUNER SECTION

Frequency range	520–1710 kHz (10-kHz step)
AM Sensitivity S/N 20 dB at 1000 kHz	560 µV/m
Preset station	15

■ GENERAL

Power supply	AC 120 V, 60 Hz
Power consumption	
Main unit	38 W
Subwoofer SB-WA820P	250 W
Dimensions (W×H×D)	430×105×352 mm ($16^{15}/_{16}$″×$4^{1}/_{8}$″×$13^{7}/_{8}$″)
Mass	5 kg (11 lb.)

Power consumption in standby mode	
BRIGHT mode	Approx. 3.5 W
DIM mode	Approx. 3.2 W
OFF mode	Approx. 1.9 W

Note

1. Specifications are subject to change without notice. Mass and dimensions are approximate.
2. Total harmonic distortion is measured by the digital spectrum analyzer.

INFO

Limited Warranty (ONLY FOR U.S.A.)

Panasonic Consumer Electronics Company,
Division of Matsushita Electric Corporation of America
One Panasonic Way Secaucus, New Jersey 07094

Panasonic Sales Company, Division of Matsushita Electric of Puerto Rico, Inc.,
Ave. 65 de Infantería, Km. 9.5
San Gabriel Industrial Park, Carolina, Puerto Rico 00985

Panasonic Audio Products Limited Warranty

Limited Warranty Coverage
If your product does not work properly because of a defect in materials or workmanship, Panasonic Consumer Electronics Company or Panasonic Sales Company (collectively referred to as "the warrantor") will, for the length of the period indicated on the chart below, which starts with the date of original purchase ("warranty period"), at its option either (a) repair your product with new or refurbished parts, or (b) replace it with a new or a refurbished product. The decision to repair or replace will be made by the warrantor.

Product or Part Name	Parts	Labor
Audio Products (except items listed below)	One (1) year	One (1) year
All Audio Racks (cabinets)	Thirty (30) days	Not Applicable
Technics Stand Alone Speakers, Subwoofer Speakers	Three (3) years	Three (3) years
USB Reader-Writer, Personal Computer Card Adapters (in exchange for defective item)	One (1) year	Not Applicable
Accessories: Headphones, Cartridges, Microphones, Adapters	Ninety (90) days	Ninety (90) days
Rechargeable Batteries, DVD-R/-RAM Discs (in exchange for defective item)	Ten (10) days	Not Applicable
SD Memory Cards, Rechargeable Battery Packs (in exchange for defective item)	Ninety (90) days	Not Applicable

During the "Labor" warranty period there will be no charge for labor. During the "Parts" warranty period, there will be no charge for parts. You must carry-in or mail-in your product during the warranty period. If non-rechargeable batteries are included, they are not warranted. This warranty only applies to products purchased and serviced in the United States or Puerto Rico. This warranty is extended only to the original purchaser of a new product which was not sold "as is". A purchase receipt or other proof of the original purchase date is required for warranty service.

Carry-In or Mail-In Service
For Carry-In or Mail-In Service in the United States call 1-800-211-PANA (1-800-211-7262) or visit Panasonic web site: http://www.panasonic.com
For assistance in Puerto Rico call Panasonic Sales Company (787)-750-4300 or fax (787)-768-2910.

Limited Warranty Limits And Exclusions
This warranty ONLY COVERS failures due to defects in materials or workmanship, and DOES NOT COVER normal wear and tear or cosmetic damage. The warranty ALSO DOES NOT COVER damages which occurred in shipment, or failures which are caused by products not supplied by the warrantor, or failures which result from accidents, misuse, abuse, neglect, mishandling, misapplication, alteration, faulty installation, set-up adjustments, misadjustment of consumer controls, improper maintenance, power line surge, lightning damage, modification, or commercial use (such as in a hotel, office, restaurant, or other business), rental use of the product, service by anyone other than a Factory Servicenter or other Authorized Servicer, or damage that is attributable to acts of God.

THERE ARE NO EXPRESS WARRANTIES EXCEPT AS LISTED UNDER "LIMITED WARRANTY COVERAGE". THE WARRANTOR IS NOT LIABLE FOR INCIDENTAL OR CONSEQUENTIAL DAMAGES RESULTING FROM THE USE OF THIS PRODUCT, OR ARISING OUT OF ANY BREACH OF THIS WARRANTY. (As examples, this excludes damages for lost time, travel to and from the servicer, loss of media or images, data or other memory content. The items listed are not exclusive, but are for illustration only.) **ALL EXPRESS AND IMPLIED WARRANTIES, INCLUDING THE WARRANTY OF MERCHANTABILITY, ARE LIMITED TO THE PERIOD OF THE LIMITED WARRANTY.**

Some states do not allow the exclusion or limitation of incidental or consequential damages, or limitations on how long an implied warranty lasts, so the exclusions may not apply to you. This warranty gives you specific legal rights and you may also have other rights which vary from state to state. If a problem with this product develops during or after the warranty period, you may contact your dealer or Servicenter. If the problem is not handled to your satisfaction, then write to the warrantor's Consumer Affairs Department at the addresses listed for the warrantor.

PARTS AND SERVICE WHICH ARE NOT COVERED BY THIS LIMITED WARRANTY ARE YOUR RESPONSIBILITY.

Customer Services Directory

Obtain Product Information and Operating Assistance; locate your nearest Dealer or Servicenter; purchase Parts and Accessories; or make Customer Service and Literature requests by visiting our Web Site at:
http://www.panasonic.com/support
or, contact us via the web at:
http://www.panasonic.com/contactinfo
You may also contact us directly at:
1-800-211-PANA (7262),
Monday-Friday 9 am-9 pm; Saturday-Sunday 10 am-7 pm, EST.

For hearing or speech impaired TTY users, TTY : 1-877-833-8855

Accessory Purchases

Purchase Parts, Accessories and Instruction Books online for all Panasonic Products by visiting our Web Site at:
http://www.pasc.panasonic.com
or, send your request by E-mail to:
npcparts@panasonic.com
You may also contact us directly at:
1-800-332-5368 (Phone) 1-800-237-9080 (Fax Only) (Monday – Friday 9 am to 8 pm, EST.)
Panasonic Services Company
20421 84th Avenue South, Kent, WA 98032
(We Accept Visa, MasterCard, Discover Card, American Express, and Personal Checks)

For hearing or speech impaired TTY users, TTY : 1-866-605-1277

Service in Puerto Rico

Matsushita Electric of Puerto Rico, Inc. Panasonic Sales Company
Factory Servicenter:
Ave. 65 de Infantería, Km. 9.5, San Gabriel Industrial Park, Carolina, Puerto Rico 00985
Phone (787)750-4300, Fax (787)768-2910

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INFO

Limited Warranty (ONLY FOR CANADA)

Panasonic Canada Inc.
5770 Ambler Drive, Mississauga, Ontario L4W 2T3

PANASONIC PRODUCT—LIMITED WARRANTY

Panasonic Canada Inc. warrants this product to be free from defects in material and workmanship and agrees to remedy any such defect for a period as stated below from the date of original purchase.

COMBINATION DVD player/VCR One (1) year, parts and labour

LIMITATIONS AND EXCLUSIONS

This warranty does not apply to products purchased outside Canada or to any product which has been improperly installed, subjected to usage for which the product was not designed, misused or abused, damaged during shipping, or which has been altered or repaired in any way that affects the reliability or detracts from the performance, nor does it cover any product which is used commercially. Dry cell batteries are also excluded from coverage under this warranty.
This warranty is extended to the original end user purchaser only. A purchase receipt or other proof of date of original purchase is required before warranty service is performed.
THIS EXPRESS, LIMITED WARRANTY IS IN LIEU OF ALL OTHER WARRANTIES, EXPRESS OR IMPLIED, EXCLUDING ANY IMPLIED WARRANTIES OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE.
IN NO EVENT WILL PANASONIC CANADA INC. BE LIABLE FOR ANY SPECIAL, INDIRECT OR CONSEQUENTIAL DAMAGES.
In certain instances, some jurisdictions do not allow the exclusion or limitation of incidental or consequential damages, or the exclusion of implied warranties, so the above limitations and exclusions may not be applicable.

WARRANTY SERVICE

For product operation and information assistance, please contact your Dealer or our Customer Care Centre at: Telephone #: (905) 624-5505
Fax #: (905) 238-2360 Web: www.panasonic.ca

For product repairs, please contact one of the following:
- Your Dealer who will inform you of an authorized Servicentre nearest you.
- Our Customer Care Centre at (905) 624-5505 or www.panasonic.ca
- A Panasonic Factory Servicentre listed below:

Richmond, British Columbia	Calgary, Alberta	Mississauga, Ontario	Lachine, Québec
Panasonic Canada Inc. 12111 Riverside Way Richmond, BC V6W 1K8 Tel: (604) 278-4211 Fax: (604) 278-5627	Panasonic Canada Inc. 6835-8th St. N. E. Calgary, AB T2E 7H7 Tel: (403) 295-3955 Fax: (403) 274-5493	Panasonic Canada Inc. 5770 Ambler Dr. Mississauga, ON L4W 2T3 Tel: (905) 624-8447 Fax: (905) 238-2418	Panasonic Canada Inc. 3075, rue Louis A. Amos Lachine, QC H8T 1C4 Tel: (514) 633-8684 Fax: (514) 633-8020

IF YOU SHIP THE PRODUCT TO A SERVICENTRE
Carefully pack and send prepaid, adequately insured and preferably in the original carton.
Include details of the defect claimed, and proof of date of original purchase.

Product Service

1. **Damage requiring service**—The unit should be serviced by qualified service personnel if:
   (a) The AC power supply cord or AC adaptor has been damaged; or
   (b) Objects or liquids have gotten into the unit; or
   (c) The unit has been exposed to rain; or
   (d) The unit does not operate normally or exhibits a marked change in performance; or
   (e) The unit has been dropped or the cabinet damaged.
2. **Servicing—**Do not attempt to service the unit beyond that described in these operating instructions. Refer all other servicing to authorized servicing personnel.
3. **Replacement parts**—When parts need replacing ensure the servicer uses parts specified by the manufacturer or parts that have the same characteristics as the original parts. Unauthorized substitutes may result in fire, electric shock, or other hazards.
4. **Safety check**—After repairs or service, ask the servicer to perform safety checks to confirm that the unit is in proper working condition.

The servicer will require all components to service your system.
Therefore, should service ever be necessary, be sure to bring the entire system.

Product information

For product information or assistance with product operation:

In the U.S.A., refer to “Customer Services Directory” on page 54.
In Canada, contact the Panasonic Canada Inc. Customer Care Centre at 1-800-561-5505, or visit the website (www.panasonic.ca), or an authorized Servicentre closest to you.